THE BUILDER
A JOURNAL FOR THE ARCHITECT & CONSTRUCTOR

VOLUME CXXIII. No. 4160. Eightieth Year.

FRIDAY, OCTOBER 27, 1922.
REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER.

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THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

VOL. CXXIII.—No. 4160. OCTOBER 27, 1922.

A NEW DEPARTURE.

THE possibility of an architectural renaissance in this country would appear to depend primarily upon the evolution of some recognised style of building, a style suited to the requirements of the twentieth century, of severe simplicity, and broad in conception. Our streets are lined with a hotch-potch of structures bearing no relation to one another either as regards levels, materials, or design; imitation Early English and Georgian, pseudo-Florentine and Ionic, jostle one another in an endless medley. These conditions (which are not to be confused with those legitimately arising from differences of date or function) are gradually being improved, and some slight symptoms of a national and representative style are to be found, but the responsibility of forming such an architectural style, bereft of superfluities, that shall honestly meet present-day requirements, must fall more and more upon our architectural schools.

It may be argued that the chaos of the Strand is preferable to the soulless monotony of Victoria-street, that the level sky-line of the latter and the very fact that it is all one "style" produce a singularly depressing effect, and that we are better off with chaos. So we are, if Victoria-street be taken as an example of uniformity in style; we would rather cite it as an instance of meaningless repetition, and we would point to Nash's Regent-street, or the buildings surrounding Regent's Park, and to Sussex-square as examples of what can be done by a continuity of style as distinct from a senseless uniformity of level and design. Architecture is essentially different from the other arts in that the bad endures as long and is as much seen as the good. The Old Kent-road has proved more permanent than Nash's Quadrant. In the other arts indifferent work is inexorably weeded out; after serving its ephemeral purpose of pleasing the undiscriminating, it is soon forgotten, and the masterpieces of such as Shakespeare, Velasquez, and Beethoven remain when feeble contemporary work has disappeared. Thus it follows that it is more important to keep up a high average in architectural production than to evolve one supreme genius, although the reverse may be true in the productive sphere of the other arts.

The new Design Club, recently formed as a "post-graduate course" by the Architectural Association, should prove of the greatest value in furthering such an ideal. We give elsewhere in this number a short account of the first exhibition held by the Club, whose work is to be carried out at No. 35, Bedford-square. The Association is to be congratulated upon dropping the word "atelier," not because the French system is defective, but because foreign names introduce an exotic element into an art that, in England, should be essentially English. Our materials, our climate, and our needs must produce our architecture, and any "style" we may evolve must therefore have its roots deep in traditional English work, although we cannot, of course, remain indifferent to legitimate foreign influences. The choice of names is important, not because it matters directly what anything is called, but on account of impressions indirectly conveyed. The Design Club is intended for the use of members of the Association, past students, and others engaged in offices during the day; the work of the Club will be arranged by a jury consisting of practising architects and members of the school staff, who are themselves also practising architects. It speaks well for the public spirit of the profession that eminent outside men are available and prepared to take office on a jury in an honorary capacity. Two members of the jury are to supervise the carrying out of each subject, one being a member of the staff, and the other a practising architect with special experience of the problem involved. The advantages of such a system are obvious, for no one without practical experience of any particular class of building can know the peculiar difficulties that crop up, and nobody with such experience could fail to criticise adversely schemes of impossible grandeur. Financial limits are, and practically always have been, imposed upon architects, and it is useless to undertake what one can only call a practical design and ignore the financial side altogether. We recognise the value of exercises in pure design, for example, the working out of a classical composition or a Roman villa in the "grand manner," but we do not believe that good results are achieved by applying the same principle to a secondary school or to a block of almshouses; in such cases breadth of treatment must go hand-in-hand with a reasonable degree of economy and with careful consideration of the uses to which the buildings, if erected, would be put. We emphasise this point because, in pre-war days, there was a tendency to set commonplace subjects in architectural examinations, without definitely stating that money was to be considered of no object, and then to get designs showing such a degree of elaboration, combined with carelessness in details such as accommodation, as to be out of all touch with any conceivable reality. The system now introduced commends itself as a safeguard against mistakes of this kind.

It is difficult to devise any reasonable system of examination in modern design, for different minds solve similar problems in different ways; we should aim at getting as far as possible from the atmosphere of the examination room. The new Club will give students freedom to design what they please, and they will merely be given the opportunity of receiving criticism from those most capable of criticising; in this way, no doubt, a friendship and intimacy will be established between students and jury to a greater extent than is usually possible between master and pupil. We are by no means suggesting that eccentricity in design is desirable, but it is better for students to find out its undesirability in amicable discussion than be made to accept it as a self-evident axiom.

The architect still suffers from a reputation of being a luxury, the popular belief being that you can get your house or your school designed by anyone who knows about the thickness of walls, and, if you happen to have some cash to spare, that you can get a little "architecture" pushed in subsequently. This, above all others, is the most disastrous public misapprehension as to the architect's function; he should be regarded as a man specially trained in economical planning, as one who can provide accommodation more conveniently and compactly, and consequently more cheaply, than an untrained amateur, and it should be recognised that the architect's fee is not only a sum gratuitously spent upon embellishment but is also a return for the saving in space rendered possible by the architect's previous experience in the planning and designing of buildings.

The Architectural Association has always held a foremost place among technical schools, and it is gratifying to find it not only unimpaired by the war but more flourishing than ever. We wish the new Design Club every success.

NOTES.

The R.I.B.A. and the By-Laws.

WE understand that the Joint Committee on Building By-laws has held six meetings since its appointment by the Council in January, Mr. C. A. Dawbney occupying the chair, and Mr. S. B. Russell holding the office of Secretary. The original intention of the Committee was to urge the framing of a new Building Code or Act, of uniform application throughout England, to override all existing by-laws. While such a reform would comply with the dictates of common sense, it does not fit in with the cumbrous machinery that has slowly evolved through the British Constitution, under which we find ourselves, like Mephistopheles, dependent upon the creation of our own hands. We have already pointed out in these columns that the principle of local government practically rules out any direct central control over by-laws, and that we must therefore look mainly to the local authorities themselves for the energy to sweep aside the antiquated patchwork of requirements that surrounds building operations, and the Committee appears to be leaning towards the same conclusion.

Committees.

ANYONE who has sat on a committee knows how hard it is to get anything through without numerous trivial alterations, and, when a local authority is asked to adopt a set of model by-laws, members invariably press for slight modifications, with the result that no two districts have quite the same set, and annoyance and hardship ensue. For this reason the application of three models (Urban, Intermediate, and Rural), although highly desirable, becomes doubly difficult of execution. The public suffers, and only by educating the public to take a more active interest in the doings of its representatives on local bodies can a permanent cure be found. There is at least one aspect that has been considered by the Committee that should be set right by a sweeping enactment—it should be compulsory for every local authority to give reasons for rejecting a plan. There is nothing to be said for the present powers of concealment, and they can hardly be due to anything more than an oversight. A similar point, which does not appear to have been dealt with by the Committee, is the necessity for extending powers to the local authorities to insist upon every dwelling-house getting a full share of daylight, which, costing nothing, is vital to health. There is no excuse for leaving this as it stands, because it is a reform that would be welcomed by every local authority throughout the country.

An Outline Code.

ANOTHER suggestion put forward is that a Code might be in broad outline, within which local authorities would frame their own by-laws; thus the Code might specify for the wall a minimum heat-transmission co-efficient and a minimum crushing strength per foot run, leaving the local authority to translate these into terms of local building materials. This system might work in large towns, but in smaller districts there might be nobody capable of translating such co-efficients into terms of unusual types of walling, and we rather fear that smaller districts would suffer from undue stringency, as the local authority would tend to "play for safety." This difficulty has already been encountered under the Grant to Private Persons. The Ministry informed local authorities that it could approve reinforced concrete provided that the proposal complied with the recognised practice in that type of construction. Those local authorities who had no means of ascertaining, without incurring considerable expense, whether particular plans submitted were or were not eligible, could not take the responsibility of approving them at all.

Architects and "Building."

OUR attention has been drawn to a suggestion made by a representative at a meeting of a Scottish education authority to the effect that the architectural work on a new school should be given to the Master of Works; it was urged that in this way some hundreds of pounds would be saved in architects' fees. While it is, of course, possible that certain exceptional men who are not architects but who have given themselves some architectural training may be able to produce work of architectural merit, yet an attempt to seek economy by employing those who are often only amateurs to design buildings is fundamentally wrong. It ought to be obvious that the architect's fees are, as a rule, saved over and over

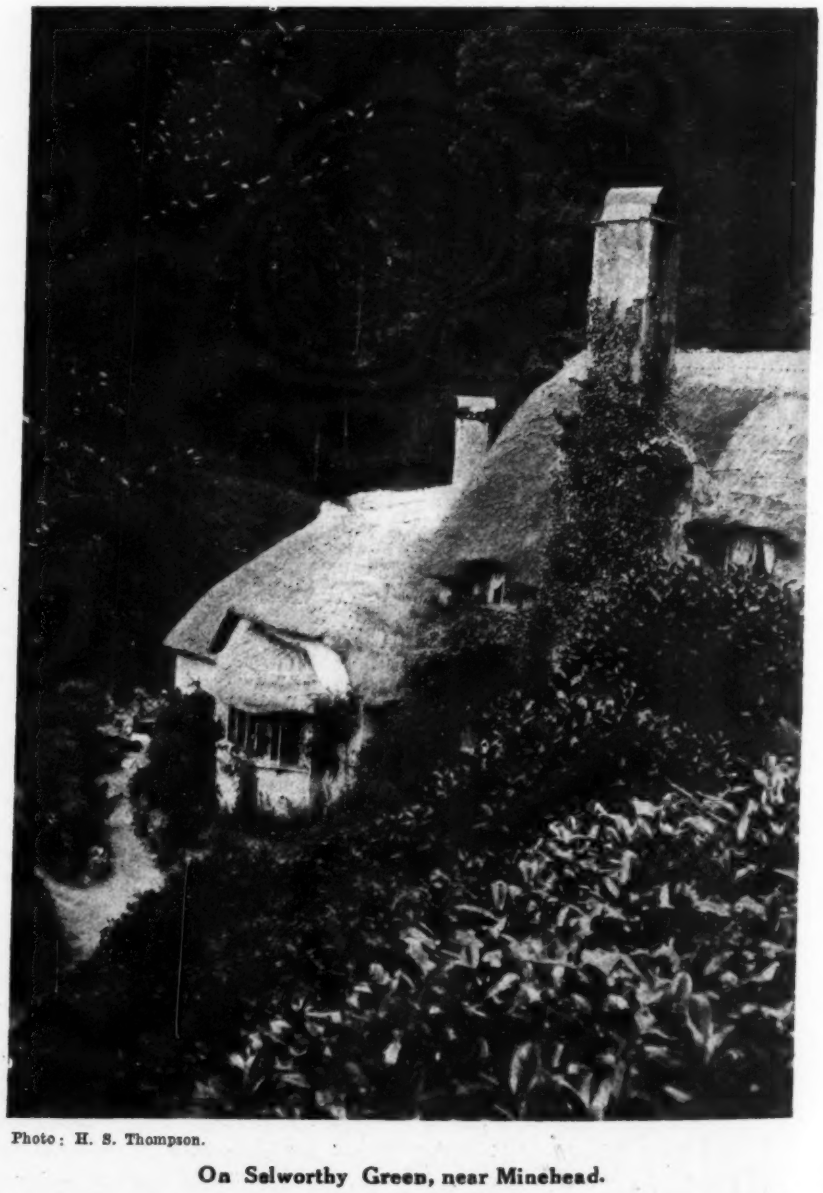


Photo: H. S. Thompson.

On Selworthy Green, near Minehead.

[This photograph shows one of the mixed plantations on the Acland Estate, the beauties of which are being urged by the Acland family and the National Trust.]

again by the ability of the architect, if he is a competent man, to produce a compact plan and so to provide the same accommodation in a smaller building than is otherwise necessary. There is the further point that a salaried official is engaged by a local authority to do certain work, and he cannot reasonably or fairly be expected to attempt work outside his own province in order to save (possibly) the ratepayers the legitimate fees due to the expert. The trouble arises from a lack of appreciation and understanding of what architecture is; it is too often imagined that provided a man can "build" he can also design. We feel confident that this short-sighted attitude is slowly disappearing, and we note with satisfaction that the authority referred to above took a broader view than the representative we have quoted.

Housing and Religion. We have received a circular letter, signed by many leaders of religion in London, emphasising the intimate connection between morals and environment which will, we hope, be merely a prelude to a sustained effort on the part of the churches to interest the public in the housing problem, which still remains unsolved. The pamphlet referred to in the letter takes the bold and proper course of saying definitely that the housing problem can be and must be solved, and it insists on the primary necessity for each individual citizen to see that it is solved. The Government housing scheme has failed as an expedient for creating all or nearly all the accommodation required, and a more enlightened public opinion would certainly have prevented both the excessive building programme which forced up the prices in 1919–20 and the complete reversal of policy that succeeded it, and which now threatens to undo all the good that has resulted from the improved standard set in the original scheme.

Houses of the Future. A movement of the kind now being initiated by the churches should be of the greatest value if it can bring home to the public the necessity for dealing seriously with housing, for accepting a definite standard, and for exercising rigid economy subject to the standard agreed upon as necessary. The matter is too important to be treated as a political pawn or as a passing "stunt." Only a sustained effort covering many years can render the position even tolerably satisfactory, and it is doubtful whether a real solution could be found at all without the co-operation of the churches. Quality is more important than quantity, and we must see that the improved standard, set up after the most exhaustive inquiry, in the Tudor Walters' Report, and in the main adopted in the great Government schemes, is not set aside in a short-sighted attempt at economy, an "economy" that will merely perpetuate the evils from which we are now suffering.

Social Reconstruction. We are aware that the idea of reconstruction has passed through many phases, and that we were encouraged by the Ministry of Reconstruction to believe that a simple return to the social and industrial situation as it existed at the outbreak of war must be supplanted "by the larger and worthier ideal of a better world after the war." We were told that there was much to be ashamed of when we looked back to the conditions of July, 1914, and out of justice to the living and out of reverence to the dead we were called "to rebuild the national life on a better and more enduring foundation." The ideals are excellent, but one is left in doubt whether they are meant as a spiritual change for the mind, chastened by war, or whether some great scheme of national philanthropy would see to our physical needs. Is it so certain now, in the midst of bad trade and unemployment, that the familiar grooves of July, 1914, were as bad as we were led to believe? The great captains of industry have stated that the prosperity of the workman does not depend upon wages but upon the relationship of his wages to production. In other words, the measure of his output is the measure of his prosperity. The sentimental conception of wages is only a part of the greater problem, and in theory is merely an extension of the system of "doles" for doing nothing. The problem is much deeper if we have in mind the raising of the status of the workman, and it is the workman himself who controls the real value of his wages.

Sculptors and War Memorials. The letter of the Duchess of Rutland appearing in *The Times* calling attention to a neglect to mention the names of the sculptor, architect or other artist concerned with the production of a war memorial, expresses a view which is felt by many. All the local magnates, the Cabinet Minister or Bishop who pulls the cord are mentioned, but the artist seldom. And there is much that appeals to us when the Duchess goes on to say: "I feel that even the lowly and unpretentious worker in honour of the dead (even the nameless workman for a firm of stonemasons) should have his heart warmed by recognition and appreciation; many a one must have been made sorrowful by the lack of them." There are many instances of old houses about the country, such as Moreton Hall, which have the name of the mason or carpenter inscribed on his work on the building. Unfortunately there is little recognition of art in ordinary life, and it is really due more

Royal Academy War Memorial.
Mr. Trenwith Wills, A.R.I.B.A., Architect.
[This tablet, in Portland stone, has been erected in the entrance portico of the Royal Academy, Burlington House.]

to ignorance than any conscious neglect that the name of the artist goes unrecorded so often. Perhaps it is also a proof of his modesty and disinterestedness at a time of so much self-assertion and love of the "upper seats." Sir Ernest George, R.A., who writes to our contemporary on the subject, remarks that "the apathy of the public as to the authorship of a work of art is to be regretted; architects as well as sculptors suffer for the want of general interest in the creative part of their work. As knowledge increases and taste improves, there may grow up a spirit of fair criticism and appreciation that should help and encourage the worker." We hope and believe he is right.

The Concrete Institute. At an extraordinary general meeting of the Concrete Institute last week (see p. 636) it was unanimously agreed to change the title of that body to "The Institution of Structural Engineers," with the object, as stated by Mr. Wentworth-Sheilds, of embodying in its name a more accurate description of the membership and scope of the Institute. The concrete industry has made such enormous progress during the past few years that one would have thought there was ample scope for a professional body solely devoted to its interests, or that at any rate the word concrete might have been retained as part of the new title; however, we wish it every success under its new name and in its enlarged scope. There are, we understand, schemes already in progress for the formation of provincial branches of the new body.

GENERAL NEWS.

Sir Thomas Brock's Estate.

Sir Thomas Brock, R.A., of Merrieweathers, Mayfield, Sussex, and of 30, Osnaburgh-street, London, N.W., sculptor, died leaving £83,555, with net personalty £77,380. He bequeathed £500 to the Royal Society of British Sculptors.

Christ Church, Westminster.

In connection with the restoration of Christ Church, Westminster, an appeal for £2,000 is being made. The church stands on the site of the New Chapel, Broadway, which served as a stable for Cromwell's troopers, and also as a prison.

Civic Design and Town-Planning.

Town-planning in Italy was dealt with recently by Mr. William Haywood, F.R.I.B.A., in the second lecture of the series which he is delivering at the Birmingham University on "Civic Design and Town-Planning." The course of lectures has been arranged at the instance of the Bournville Village Trust, and admission will be free, the object being to attract members of the public.

Paintings by Sir W. B. Richmond.

An exhibition of studies by the late Sir W. B. Richmond, R.A., will be held in the South London Art Gallery (Lord Leighton Memorial), Peckham-road, S.E.5, from October 17 until November 26, 1922. The Galleries are open each week-day from 3 p.m. to 10 p.m., except Friday, when they are closed. On Sunday the Galleries are open from 3 p.m. to 9 p.m.

The Architecture Club.

The second quarterly dinner of the Architecture Club is to be held on Friday, November 10, at the Hotel Cecil, at 8 p.m. The speakers are to include Mr. Hilaire Belloc, Mr. Oswald P. Milne, Professor W. Rothenstein, Mr. G. Gilbert Scott, R.A., and Sir Lawrence Weaver. On Saturday afternoon, November 11, the members of the Club will visit the new County Hall.

Newcastle Rotary Club.

"The Position of the Architect in Industry" was the title of an address given by Mr. C. A. Harding, A.R.I.B.A., to members of the Newcastle Rotary Club last week. There was, he said, a peculiar tendency on the part of many firms, with the object of saving money in specialist's fees, to entrust the preparation of plans and the carrying out of works to members of their technical staffs. That attitude, he contended, was most illogical.

R.I.B.A. Medal for Schools of Architecture.

The R.I.B.A. Board of Architectural Education Medal for the best set of drawings submitted by post-graduate students exempted from the R.I.B.A. Final Examination, at the Exhibition recently held at the Royal Institute, has been awarded to Mr. P. B. Haswell, B.Arch. Liverpool University. Mr. Haswell will receive the medal at the annual presentation of prizes at the R.I.B.A. The drawings prepared by Miss E. G. Cooke, of the Architectural Association, received high commendation.

Technical College, Bradford.

In connection with the Department of Civil Engineering and Building, of the above College, the following special courses consisting of about twelve lectures each will be delivered under the direction of Dr. R. E. Stradling, Head of the Department:—For Builders: Plain and Reinforced Concrete; Strength and Properties of Materials and Structures; Geometry of Building Construction; Refresher Course in Mathematics. For Plumbers: Lead Burning and Acetylene Welding. The courses will be held on one evening a week from 7.15 to 9.15.

The Grand Avenue, Stowe.

Mr. Clough Williams-Ellis informs us that his sole object in purchasing the Grand Avenue at Stowe at the sale last week was to ensure its preservation in perpetuity as being historically part of Stowe as well as one of the chief glories of Buckinghamshire. As Mr. Williams-Ellis cannot hold this property indefinitely, he hopes that a local trust may be formed to take it over and preserve it intact for ever. For the present the Town Clerk of Buckingham is acting as treasurer for the Avenue Trust Fund, and will gratefully acknowledge subscriptions.

The Society of Architects.

On and after November 1, the Society of Architects will issue its monthly *Journal* in a new series under the title of "Architecture." The new journal is intended not for the architect exclusively but equally for the satisfaction of members of the public who are taking an interest in the art of architecture. Its principal object will be the critical examination of architecture in general, and of those conditions which in the past have favoured, and in the future are likely to favour, the existence of an architecture of the the first order.

The Incorporation of Architects in Scotland.

A meeting of the Council was held at Edinburgh recently, Mr. T. B. Marwick, the President, in the chair. It was decided to set aside for education purposes £5,000 out of the money bequeathed by the late Sir R. Rowand Anderson, and it was remitted to the Education Committee to draw up a scheme of bursaries and scholarships to be met by the annual income of the capital fund.—It was decided to open a subscription list for the structural repairs fund in connection with St. Paul's Cathedral.—A further sum of £25 was voted towards the expenditure of the Glasgow Chapter in connection with the recent exhibition of American architecture.

Restoration of St. Paul's.

We understand that Sir William Treloar has made himself responsible for raising a "Ludgate Fund" towards the cost of the restoration of St. Paul's Cathedral, and has forwarded to Canon Alexander a cheque for £2,245 12s. Messrs. Nelson, of Stockton, near Rugby, have offered a gift of 30 tons of best Portland cement, which has been accepted by the Cathedral authorities.

The commission of experts who are inquiring into the condition of St. Paul's Cathedral decided at the end of last week that it was necessary at once to complete the scaffolding round all the six unfinished piers, except the two in the Choir, which will be dealt with later, and to remove any loose or defective stones. This decision was the result of a careful examination of the stonework on the north-east pier.

The Royal Institute of British Architects.

The list of sessional meetings of the Royal Institute of British Architects has now been issued, and includes the following: November 6: Inaugural meeting (President's address); November 20: Mr. Lawrence M. Tye on "Illuminating Engineering in Relation to Architecture"; December 18: Mr. A. N. C. Shelley on "The Law of Building Outside London"; January 22: Mr. Ralph Knott and Mr. W. C. Riley on "The London County Hall"; February 5; President's Address to Students and Prize Distribution; Feb. 19: Mr. H. V. Lanchester on "Architecture and Architects in India"; March 5: Election of Royal Gold Medallist; March 19: Mr. G. E. S. Streatfeild on "The Hammersmith Housing Scheme"; April 9: Mr. Henry M. Fletcher on "The Architecture of Provincial France"; April 23: Mr. W. G. Newton on "The Literature of Architecture"; May 7: Annual General Meeting; May 28: Mr. Geoffry Scott on "Tradition and Originality in Italian Renaissance Architecture"; June 25: Presentation of Royal Gold Medal.

Gas Conference at Bristol.

At the recent annual conference of the British Commercial Gas Association at Bristol, Mr. P. S. Hoyte, A.M.I.Mech.E., engineer of the Plymouth and Stonehouse Gas Light and Coke Company, in an address on "Some All-Gas Houses," observed that labour-saving devices, though familiar in industry for at least a century, were only slowly finding their way into the Englishman's home. Yet the expenditure of effort on distasteful drudgery could be dispensed with. The dirt could be eliminated from homes and from the atmosphere by the use of smokeless solid fuels; and that in itself was no contemptible improvement. But solid fuels, smokeless or otherwise, were still solid; and the handling of them involved a staggering amount of unnecessary effort. Gas, on the other hand, being delivered at the very point it is required, needed no effort beyond the turning of a tap. To illustrate the advantages to the housewife, Mr. Hoyte described two all-gas cottages recently erected on the outskirts of Plymouth. In these ideally comfortable homes the economy, not only in labour but in money, was remarkable. With gas at its present price in Plymouth—10.8d. per therm—the families of three or four persons occupying the cottages had obtained for a whole year all their light, warmth, cooking, bath, washing, and ironing, for the modest average sum of £10 14s. 6d.

Obituary.

We regret to announce the death of Mr. James Crocker, F.R.I.B.A., a well-known architect and surveyor, which occurred on the 18th inst. at his residence, 17, Thornton-hill, Pennsylvania, Exeter, after a short illness. Deceased was a R.I.B.A. Silver Medallist (1875), and an authority on local archæology.

Educated at Shebbear College, he came to Exeter and was articled to Mr. E. H. Harbottle, of Exeter, in 1867, and then became his managing assistant for six years. He commenced practice in 1876, and up to the time of his death was actively engaged at his office in Castle-street, Exeter. The late Mr. Crocker carried out many important works, among them being the "Queen's Hall," Eastgate Arcade and Coffee Tavern, Exeter, and a large number of restorations and rebuilding of churches and chapels in Exeter and district, &c. He was a past-President and member of the Council of the Devon and Exeter Architectural Society, and also acted as arbitrator in many important architectural disputes.

In 1886 he published a book, "Old Exeter," containing sketches of many old houses, many of which have since been demolished. Mr. Crocker was held in the highest esteem by a wide circle of friends, who extend to Mrs. Crocker and her two daughters their heartfelt sympathy. The interment took place at Throwleigh, where deceased was born in 1850.

COMPETITION NEWS.

Ryde.

FOR THE TOWN COUNCIL.—Designs for a pavilion to be erected in the Esplanade Gardens, Ryde. (See advertisement in our last issue.)

A notice has been issued by the Competition Committee of the Royal Institute of British Architects calling the attention of Members and Licentiates to the fact that the conditions of the above competition are unsatisfactory. The Committee are in negotiation with the promoters in the hope of securing an amendment. In the meantime, Members and Licentiates are advised to take no part in the competition.

Other Competitions.

Other competitions still open include the following (the dates given are, first the sending-in date, and second the issue of *The Builder* in which full particulars were given): Colombo Town Hall (Nov. 1, July 14); Labour Saving Bungalow (Nov. 1, Aug. 7); *Chicago Tribune* Building (Nov. 1, Sept. 15); Birkenhead War Memorial (Dec. 29, Sept. 15); Hospital in America (Jan. 15, 1923, Sept. 29); Port Said War Memorial (March 31, 1923, Sept. 29); A. and S.A.P.U. Essay (Oct. 31, Sept. 29); Old Cranleighan Cricket Pavilion (Oct. 6).

STAPLE INN HALL.

The Hall of Staple Inn is a little building of great beauty and of unusual interest. About thirty years ago, or rather more, the late Alfred Waterhouse, R.A., was called in by the Prudential Assurance Company to preserve it at the same time that he was dealing with similar preservation work on the well-known black and white frontage of the Inn. Mr. Paul Waterhouse, P.R.I.B.A., then working with his father, had a personal share in the interesting work of preservation, and made some measured drawings of the unusual and very striking roof timbers. It is the roof which is the most significant part of an otherwise rather simple chamber, and it is the roof which has recently brought the building into public notice owing to the discovery that it is afflicted, like the more celebrated Westminster Hall, with the attacks of the now familiar *Xestobium Tessellatum*, a beetle whose private and domestic life is romantic beyond all belief, but whose public performances are a public nuisance on a very large scale.

The date of the roof is 1581. When some few years ago Mr. Paul Waterhouse was engaged on some repair of the structure he looked in vain for a date panel, which he felt sure that he remembered to have seen and the existence of which he proved by the record on his own drawing. The use of a ladder revealed the inscription, which by lapse of time and the unavoidable accumulation of dirt had become invisible from the floor of the Hall. It was then further discovered that the inscription, which combines the date with the initials R.C. (Richard Champion) within a cleverly arranged cord device, was neither carved nor painted, but inlaid. The letters, figures, and device were filled up to a flush surface with wax.

Dreading the further obliteration, Mr. Waterhouse had the letters gilded with gold leaf, so that they have been since clearly visible, and the visibility has been secured without doing any violence to the original and interesting treatment. When Mr. Waterhouse's father gave his attention to the roof in 1887 he limited his operations to strengthening the original oak timbers with iron plates, wood insertions, and (this was the principal expedient) with tie rods designed to help without unnecessarily disfiguring the inherent and natural failing of a hammer beam roof. In those days, though the "worm," or rather the *Xestobium*, was in evidence, its work was confined to small areas, and had not disintegrated the timbers to any serious extent. Unfortunately, experience and science had not in those days either realised the fatal power of this pest nor discovered its remedy; otherwise what is being done to-day would have been done then, and probably done with much less labour.

It was the failure of a lintel over the head of one of the windows that first drew attention to the fact that *Xestobium Tessellatum* was fast achieving by "peaceful penetration" one of his masterpieces of destruction. Mr. Waterhouse, with the ready permission of his clients, the Prudential Assurance Company, called in the advice of Professor Lefroy, who, it will be remembered, was successfully engaged in Sir Frank Baines' work at Westminster Hall. Professor Lefroy confirmed the identity of the beetle, and gave the advice, which is being followed, as to the solution to be used and the method of its forcible application. To summarise what is being done it may be explained that all the wall plates are being removed and their places taken by steel joists. (The *Xestobium*, when depositing its eggs *within* the timber, prefers a log built into a wall to one surrounded by air. Hence the special vulnerability of a wall plate.) All badly "eaten" timber in the principals is being cut out, and its place supplied by new oak, spliced or scarfed in as required. Iron plates are being attached where necessary. The whole weight of the roof is being taken from the principals, which will in future have nothing but themselves to support. This result is secured by the placing of new iron principals up each side of the old timbers. By a strange dispensation of Providence the principals have so sagged that the irons, which are parallel to the intended and doubtless original line of the backs of the principals, run clear of the oak purlins, which can consequently be "stirrupped" on to them without being cut. Though "soft wood" is rarely attacked by the beetle the precaution is being taken of spraying all the deal rafters with the same solution that is being forced into the main timbers.

Staple Inn Hall: Foot of Principal Rafter, exposed for Repair.

The work is in the hands of Messrs. Holland & Hannen, the firm who dealt with the previous restoration of the Hall, and naturally, in spite of constant supervision, a great deal of responsibility rests with them, and the results, if successful, will be largely due to their constant vigilance and care. The actual spraying is being carried out by an assistant from Professor Lefroy's own laboratory. Mr. Michael Waterhouse is closely and constantly connected with this very interesting work, and it must not be overlooked that but for the forbearance of the Society of Actuaries, who are tenants of the Hall, it would not have been possible to embark on the work of repair.

Mr. Perkins, the District Surveyor, has taken more than a mere "dangerous structure" interest in the constructional problems involved, and his timely advice has been very helpful. Those who are interested in the before-mentioned private life of *Xestobium Tessellatum* will find in the Blue Book on the repairs of Westminster Hall a record of almost miraculous romance such as has seldom found its way into a Government publication. They will there read how this destructive creature, hatched out in the very inward parts of the wood, goes through his metamorphic life up to the stage when he knows himself capable of becoming the father of a family. He then, having done his boring mischief, taps on the thin film of wood fibre which separates him from the exterior of the log. This tapping, said to be a series of exactly eight blows, gives him among men the title of "the death watch," but among his fellow-*Xestobia* it is the announcement of his readiness to begin the life of a family man. And so the horrid work proceeds, and, failing the death-dealing solution, another lot of eggs is passed into the long-suffering timber.

It is thought that the introduction of a heating system has probably increased the evil by speeding up the life history of the creature and so multiplying his ratio of production within a given period. He dies quicker, but he lives a faster life.

Staple Inn Hall: Foot of Common Rafters, exposed for Repair.

CORRESPONDENCE.

The Cost of Bungalows.

SIR,—With reference to your correspondent's remarks in the last issue of *The Builder*, the arguments advanced for and against bungalows do not appear to be very convincing, and whether the quotation of ascertained costs at per ft. cube, or per ft. super of floor area, would help is problematical. The issue appears to be, What is the difference in the cost of providing the accommodation required by a client (a) on one floor only; (b) on two floors.

Treating the "accommodation" as the number of rooms (living and bed) to be arranged for, and passages, lobbies, staircases, &c., as merely the means of communication, and also kitchens, sculleries, larders, baths, w.c.'s, &c., as the necessary accessories to such accommodation, and disposing of the variations in cost arising from peculiarities in site, accessibility, economical planning, variations in size of rooms, and specification, by taking the average cost of types, we get a reasonably clear and reliable basis of comparison. I have selected as examples of bungalows only those illustrated in *The Builder*, and of which you give the cost. As these details are not similarly available for houses, I have given examples of houses just recently completed or now in course of erection. Possibly other readers will give data on these lines.

My own opinion, formed by taking off quantities and preparing estimates for a considerable period, is that a house is always cheaper to erect than a bungalow, unless the latter is of very flimsy construction.

BUNGALOWS.

		Per room.
(1) Kimbolton-road, Bedford (illustrated page 506; tenders, page 477)—4 rooms..	£740 =	£185
(2) Oakley, Beds. (illustrated page 505; tenders, page 477)—3 rooms	£750 =	£250
3) Stifford's Bridge, Worcester (illustrated page 505; cost, page 505)—6 rooms	£1,400 =	£233

Average cost per room, £222.

HOUSES.

		Per room.
(1) Bedford. 4 rooms.....	£629 =	£158
(2) Hertfordshire. 5 rooms ..	£742 =	£149
(3) Northants. 5 rooms	£1,120 =	£224

Average cost per room, £177.

GEORGE NORMAN,
Bedford. Surveyor.

Town-Planning.

SIR,—I quite agree with your observation on page 589 of last week's *Builder* to the effect that town-planning is a far more comprehensive idea than housing, with which it is often confused. On the other hand, you can hardly mean to suggest—as the paragraph I refer to seemed to imply—that a garden city does not come within the term "town-planning."

For, on the contrary, a garden city, such as I outlined in my book, "Garden Cities of To-morrow," published in 1898, is "a town definitely planned so that the whole question of municipal administration may be dealt with by one far-reaching scheme . . . The final scheme will, no doubt, be the work of many minds—the minds of engineers, architects, surveyors, landscape gardeners, &c. But it is essential that there should be unity of design and purpose—that the town should be planned as a whole, and not left to grow up in a chaotic manner, as has been the case with all English towns, and more or less so with towns of all countries."

In no town in England has the zoning principle been so distinctly recognised and carried out as in Letchworth, the first garden city, where, for example, a definite area of 150 acres was assigned to factories, on which no dwelling-house (except those of a few caretakers) has been erected.

It is not without interest to note that the Town-Planning Act was passed in 1909—six years after the starting of Letchworth, and that Mr. Thomas Adams, who founded the Town-Planning Institute in 1914, had been the manager of the first garden city.

EBENEZER HOWARD.
Welwyn Garden City.

Aptitude for Architecture.

SIR,—I have perused the address by Mr. Francis Jones, F.R.I.B.A., President of the Manchester Society of Architects, which appeared in *The Builder* of October 20, and I would like to make a few comments. It is quite correct that the student should be educated in his profession, but where the mistake is often made is by parents desiring their boys to be architects when they have not got the aptitude. I know a case where a boy was articled to a firm of Manchester architects of repute; he is now in practice as a dentist. In my opinion a boy should go into the workshops and buildings and get a practical training, as our old masters of works did. Hatfield House, the seat of the Marquis of Salisbury, is a fine specimen of ancient domestic architecture, but the builders and surveyors were a carpenter named Lyminge and a mason named Conn. There is no record of an architect having been employed, Sir Robert Cecil being his own architect; so this gentleman must have been a born architect. A few days ago I was in London and noticed at the corner of Stanhope-street a most unsightly building for a main thoroughfare. I feel sure that if the registration of qualified architects were made law and their opinions taken by local authorities and others our main thoroughfares would be made more picturesque and not, as to-day, mixed copies of different orders built in stone, brickwork and concrete. There are many landed estates that might have been laid out and made very picturesque had the advice of qualified architects been taken. The speculating builder is responsible in a great measure, but the plans had to be passed in many cases by the ground landlord and local authority. I don't profess to be an architect, although I have designed and personally superintended many structures of various classes. I rose from a carpenter and joiner to general foreman in London, was recommended as clerk of works on a large estate, and served under one of our finest land agents. I quite agree with Mr. Jones as to clerks of various kinds (I think parsons might be added) not being allowed to practise as architects. I think a great many people believe a clerk of works' post is a clerical one, and, with the architect, it is only to draw a picture; but it is the practical abilities that count. There are hundreds of architects to-day who could not practically direct the workmen to execute their drawings. A foreman for a firm of builders in my nearest town told me when I gave him working drawings for joiners' work that although there were several architects in the town, they were the first working drawings he had ever been supplied with.

DAVID H. BLACKTOP.
Yeovil.

Licences for Wooden Structures in London.

SIR,—With reference to the letter from "Schoolmaster" in your issue of October 13, and the first reference made to the subject from "M.S.A.," in the previous issue, dealing with the preparation of plans for small wooden structures, these appear at a most opportune moment. The Central Employment Bureau, which is administered by the Architects and Surveyors' Assistants' Professional Union, has been considering the matter with a view to approaching the local authorities.

This appears to be a situation in which the Bureau could be of service. There are several assistants on the Register who are qualified to prepare the necessary drawings and who would be glad to do so. It is advisable that all persons who require such drawings prepared should communicate with the Director, the Central Employment Bureau, the Architects' and Surveyors' Assistants' Professional Union, 36, Victoria-street, S.W. 1, who will be willing to forward the names and addresses of all unemployed assistants willing and capable of undertaking this work.

JOHN MITCHELL,
General Secretary, A. & S.A.P.U.

Krishnaraja Hall, Mysore.

SIR,—My attention has been drawn to an article on page 456 of the issue of *The Builder* dated October 22, 1920, on the design for the Krishnaraja Hall, Mysore City. The statement made in this article to the effect that "the design for the Krishnaraja Hall by Mr. S. H. Lakshminarasappa, B.A., B.E., B.Arch. (Liverpool), was accepted by the Government of His Highness the Maharaja of Mysore in an open competition" is incorrect.

As a matter of fact, Mr. S. H. Lakshminarasappa was not allowed to take part in the open competition, as he is an officer of Government and had dealt with the designs in his official capacity before competitive designs were called for.

I request that this contradiction may be duly published in the next issue of *The Builder* for the information of the public.

S. CADAMBI,
Chief Engineer of Mysore.

[***A copy of this letter has been sent to Mr. Lakshminarasappa, who states that his design was submitted in his official capacity and accepted after being adjudged with the other designs submitted.—ED.]

Superiority of English Timber.

The English Forestry Association writes:—"The correspondence which has appeared in the Press on the subject of the British Empire Exhibition and its timber requirements includes a vehement protest against the statement that the Empire does not contain timber suitable for the erection of fences at Wembley. It is well known that English timbers are equal, if not superior, to any that the world can supply for fencing, and, in many cases, constructional purposes. The English Forestry Association is prepared to provide these at the shortest notice, while the Empire Forestry Association would welcome the opportunity of placing the Committee of Management, or their architect, in direct touch with the necessary supplies."

Royal Academy War Memorial: Detail.
MR. TRENWITH WILLS, A.R.I.B.A., Architect. (*See p.* 609.)

THE CHURCH OF ST. SOPHIA, CONSTANTINOPLE.—II.

By SIDNEY TOY, F.S.A.

In a Byzantine structure such as S. Sophia, Constantinople, the main framework, the skeleton of the whole edifice, is designed essentially for the support of the dome: all other structural parts of the building are subservient to this primary object, and are either ancillary to it or are merely enclosures between the main supports. Thus the great dome of S. Sophia, which is 107 ft. in diameter, is upheld by a skilful system of abutment which extends to the utmost limits of the building and governs the whole plan in every stage. This will be understood by an examination of Figs. 3 to 6 and 9 to 12 (see our issue for October 13, in which will be found other figures referred to but not in this issue).

At its base the dome rests upon the pendentives and the crowns of the four central arches, and exerts thrusts tending to push out the former and overthrow the latter. On the east and west the arches, and in part the pendentives, have continuous abutment in the great semi-domes, which are placed against the faces of the arches and transmit the pressure obliquely through their shells to their bases, where it becomes vertical, and is upheld by the stone piers at the extreme east and west of the building (Fig. 1). The pendentives are further sustained by the abutment of the exedra against the central piers at the points where the diagonal thrust is exercised (Fig. 3). On the north and south the abutment is of a totally different character. Here the great arches are made deeper than those on the east and west, but the actual counterpoise is effected by four enormous buttresses, two on either side, which extend laterally to the furthest limits of the church north and south. The central portion of each of the great buttresses is divided into two sections or webs with a space between, the spaces being vaulted at each stage in the height of the buttress, and the webs, where they cross the aisles and the gynæceum above, being pierced by wide arches. These arches, like the great piers they adjoin, are built of solid masonry, and are virtually flying buttresses forming the kinetic portion of the abutment. That the arches thus formed are a part of the original work, and not additions of a later period, as suggested by M. Choisy and others, is obvious from the uninterrupted bond which exists in the masonry on the side towards the pier, and which the removal of plaster has now revealed. A heavy mass of brickwork, in the core of which a stairway was formed, composes the end and more static portion of each buttress. Though the abutment on these sides is not continuous as on the east and west, it is still effected in a most skilful manner. The greatest thrusts will occur immediately behind the pendentives in vertical planes with the east and west arches, and on a level just below the haunches of these arches. Therefore the two webs of which the buttress is composed are considerably strengthened at this level, that which directly opposes the more serious thrust of the great arch being 7 ft. 6 in. thick, and the other, abutting against the pendentive, 6 ft. 6 in. thick (Figs. 3 and 11). Further support is obtained by the squinch arches thrown across the inner angles of the buttresses near the base of the dome (Figs. 6 and 11).

The essential points of this system of support, therefore, are that the abutment is applied directly opposite to the thrusts exercised; that this abutment is continuous on the east and west, while on the north and south its strength is graduated to the intensity of the thrusts; that those members subjected to the greatest stress—the four great central piers, with the adjoining parts of the buttresses, and the piers of the east and west apses—are built of ashlar masonry, while the vaults and other parts are of brickwork; and that the base of the system is spread over the whole area of the building. Much has been written in regret that the system of abutment adopted on the east and west was not repeated on the north and south. It is useful to remember, however, that while the great buttresses have never failed, and, apart from additions made to the upper parts by Justinian himself and accretions to the outside common to the whole building, have remained practically unaltered, the western semi-dome has fallen down once, the eastern semi-dome twice, and both have given serious trouble at various other periods; an additional shell was placed on the outside of the western semi-dome at the last restoration. Again, from a purely æsthetic standpoint, the effect of vista is immeasurably superior where this alternate method of abutment—associated as it is here with the great infilling walls and arcading—is adopted than in buildings where semi-domes are employed on all sides and the central space is extended laterally. No one who has attentively observed the internal effect of the Mosque of Ahmed I or that of Yeni Valideh and afterwards returned to the study of S. Sophia can but have been struck with this circumstance.

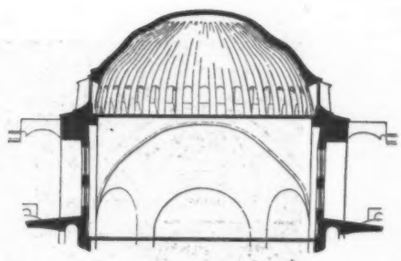
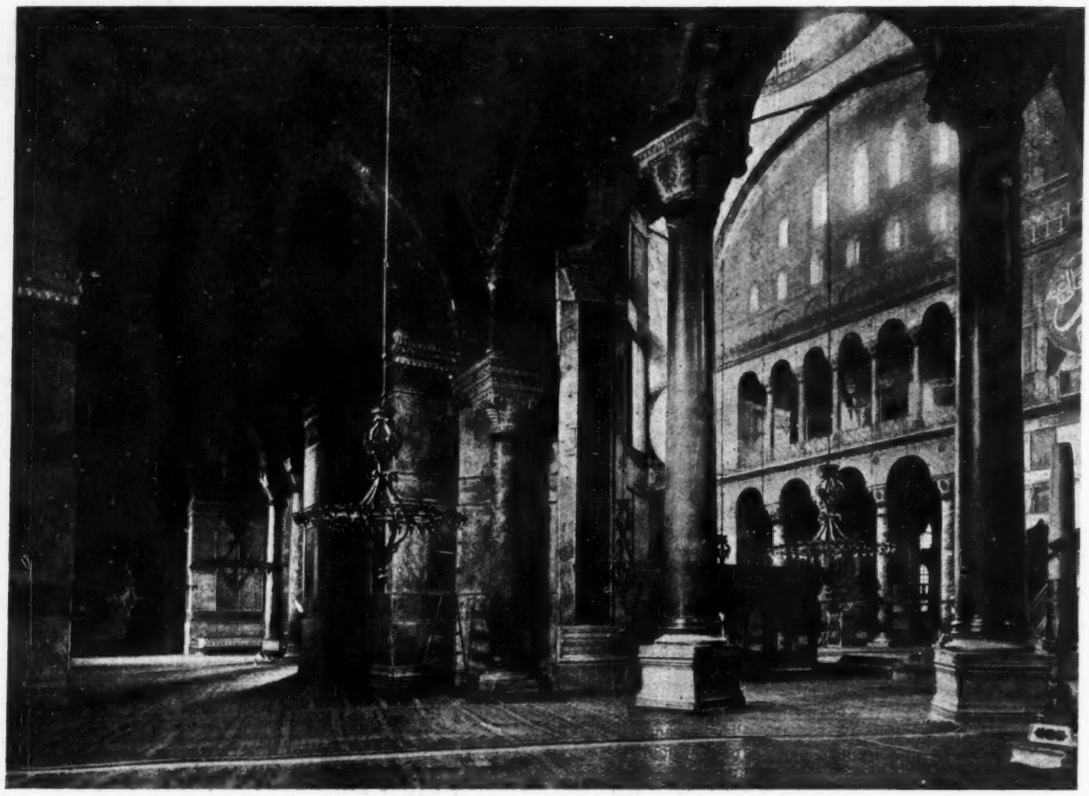


Fig. 14.—Section through the Centre of Dome looking West.

The Gynæceum and North-East Pendentive.



INTERIOR FROM THE SOUTH-EAST.

VIEW FROM THE SOUTH-WEST.

S. Sophia, Constantinople.

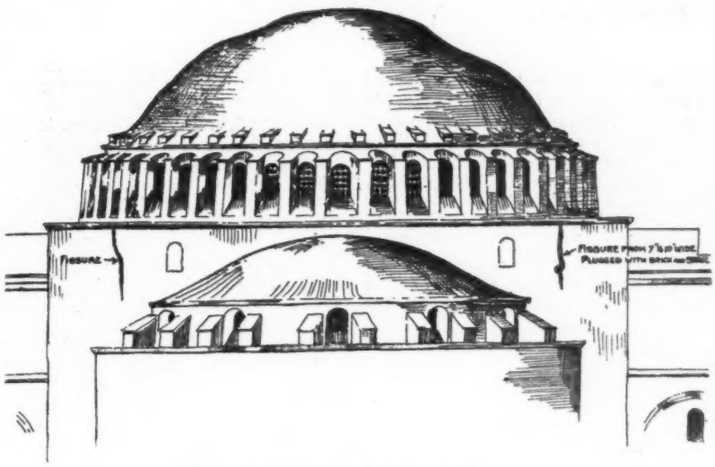


FIG. 16.—East Elevation of Dome.

In the aisles and gynæceum the vaulting is so skilfully arranged that, one part abutting against another, the whole of the thrusts are neutralised within the walls of the building. In the aisles (Fig. 1) the central compartments are covered by quatrepartite vaults, the thrusts of which are exercised chiefly in the planes of the diagonals. On the sides towards the buttresses these thrusts are met at the points of junction between the rigid buttresses themselves and the springing of the barrel vaults on the north and south; while on the sides towards the centre of the aisle they are neutralised by the counter-thrusts of three vaults which are concentrated above the central columns. In the gynæceum the vaulting is somewhat different though the method of abutment is similar. Here the main compartments are covered by low domes intersected by arches. On the sides towards the nave the abutment is interrupted by the narrow compartment there having its barrel vault raised sufficiently high to include the lower windows of the tympana—now blocked—within the gynæceum; but the weight of the material falling upon the outer arches is adequate to neutralise the relatively small thrust of the low domes. A system of iron and timber ties, the former resisting tensional and the latter compressional stresses, is employed throughout the whole building. Other timber ties, now sawn off almost flush with the wall face, were used for temporary purposes only, to prevent deformation or failure of the work during settlement, though many of them were replaced later by iron rods.

It follows from the above analysis of the principal framework of the building that the structural parts of paramount importance are the great dome and the members engaged in its support—the pendentives, the arches of the crossing, the great lateral buttresses, the semi-domes, and finally the stone piers on which the whole system rests. The equilibrium of forces and the stability of the structure will depend upon the strength of these members. A recent examination of the church, made by the writer, though restricted by the lack of provision of scaffolding and authority to remove plaster, was sufficient to reveal the present parlous condition of many important parts of the edifice, particularly of the dome, the pendentives, and the four main piers. The dome is constructed of thin bricks, laid flat in successive rings between thick mortar joints, and has a thickness of about 3 ft. above the windows, diminishing to 2 ft. at the crown. A series of internal ribs of slight projection, which rise from between the windows and die into the general face near the crown, adds considerable strength to the work. It is doubtless owing to its shape—being slightly less than hemispherical—and to its skilful and somewhat flexible construction that the dome owes its resistance to the various stresses and earthquake shocks it has sustained. At present it is distorted and buckled in all directions (Fig. 14 and photograph of exterior), and, although this has probably been the case in some degree for a very long time, the buckling inward has become accentuated in recent years, and in two places—on the north-east, at a point about midway in the height of the face, and on the south-east,

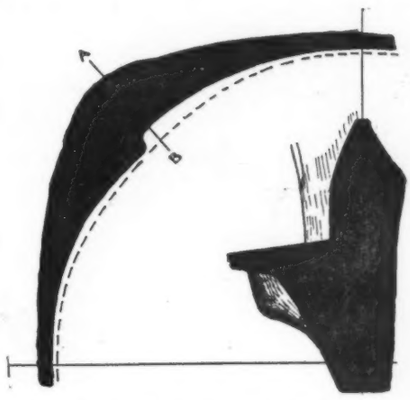


FIG. 15.—The North-East Pendentive. Plan 3′ 0″ below Base of Dome.

nearer the crown—the deflection is now most alarming. That at the north-east is a sharp inward bend, which has become so acute that the incrustation on its surface has fallen away. The twenty-three ponderous chandeliers which now depend from the dome cannot but be a source of menace to the structure in its present condition.

As already noticed in the historical sketch of the church, the original stairways leading from the roof of the gynæceum to the base of the dome were constructed in the brickwork behind the pendentives (Figs. 4, 5 and 10). This being a source of weakness, the stairways were blocked at the restoration in 563 and the upper parts enclosed in an additional mass of brickwork (Fig. 10). These precautions, however, were inadequate to resist the thrust of the pendentives, for on all three sides where the removal of plaster has exposed the face of the brickwork long fissures, near the junction of the original with the later work, are disclosed. In the interior all the pendentives have relatively true surfaces except that on the north-east. There, however, the state of the work is very disquieting. At the head and near the centre of this pendentive there is a most peculiar contortion, as though part of the face had been pushed back beyond the rest. The break is so abrupt about 8 ft. below the gallery round the dome (Fig. 15) as to lead to the inference that a rupture had occurred here at some period and that a hurried and unskilful repair was effected. In any case, this pendentive is in a most insecure condition. The fissure in the brickwork behind (Fig. 16) is a long, irregular gap from 7 in. to 10 in. wide, now crudely plugged with bricks and stone, while moisture has penetrated through to the interior, and has spread itself over the face of the pendentive. It is immediately above this pendentive that the serious deflection of the dome, noted above, occurs.

The great semi-domes appear to be comparatively sound, and the central arches though considerably out of shape, particularly that on the west (Fig. 14), are not much deflected vertically, and probably have been distorted for centuries. But the stone piers, on which the support of the whole superstructure depends, are fissured and crushed in a most serious manner. In all cases where in the gynæceum gallery the plaster has been removed from these piers long fissures are exposed in the ashlar masonry of which they are constructed (Figs. 17 and 18). The south-west pier is in a particularly parlous condition. It is considerably fractured on the south side and on the east is a fissure about 8 ft. long. This last is now held by two long iron clamps, about 2 in. square, and placed 6 ft. apart, which were probably inserted at the last restoration. Three of the arches constructed through these piers at the gynæceum level are blocked, but the infilling masonry, where exposed, does not appear to be very effective as means of support. That the piers have settled slightly more than the outer brickwork, bringing the adjoining arches with them, is obvious from the gap which exists at the straight joint between the masonry and brickwork (Fig. 17), which, in the case of the north-west buttress, is from

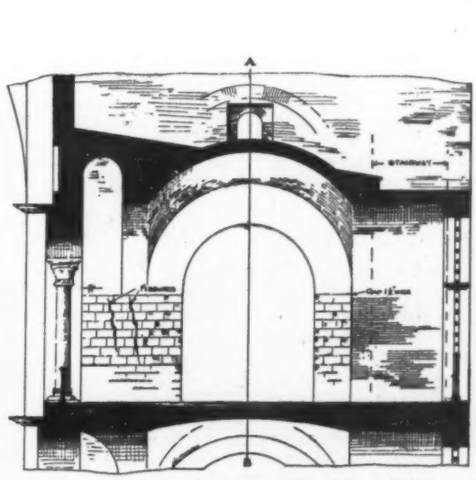


FIG. 17.—South-East Buttress from the Gynæceum, West Side.

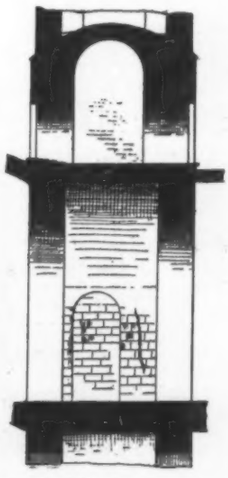


FIG. 18.—Section on A. B. looking North.

1½ in. to 3 in. wide. In order to observe any present tendency which the fissures and gaps, both in the piers and elsewhere in the church, may have to widen, strips of glass, secured on either side by cement, were placed across them about 12 years ago. There are generally three of such strips across each fracture; some of them are intact, some are cracked, and some are broken away altogether. There is reason to believe that no reliable data are to be deduced from their present condition. In describing the present state of the building it has been thought desirable to concentrate on the serious condition of some of its most vital parts. Elsewhere in the edifice repairs are requisite, but they are not so urgent. The pavement of the gynæceum, both on the north and south, is considerably depressed in the centre, that on the south to the extent of 8½ in. It falls inwards in one place, outwards in another, and the large marble slabs of which it is composed are cracked in all directions; but since the vaults of the aisles below are in relatively good condition this circumstance is not immediately disquieting. The great tympana under the north and south arches are considerably buckled, particularly that on the north, and cracks and fissures are observable in the outside walls at the gynæceum. But the parts requiring immediate attention, the urgency of which cannot be too strongly emphasised, are the dome, the north-east pendentive and the four main piers.

It is much to be hoped that every effort be made in the proper quarter to preserve this venerable fabric from disaster, lest irreparable damage is occasioned through lack of prompt and skilful attention. The historical associations of this noble building, the important place it has occupied in the religious life of the world, the unique example of construction and embellishment it supplies to the realm of art, and its own transcending beauty must make its condition a subject of deep concern to the whole civilised world.

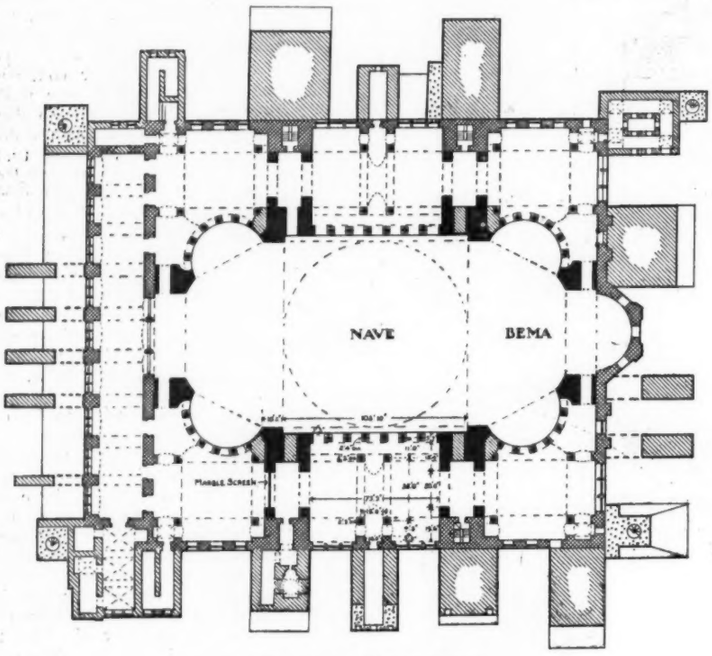


FIG. 2. PLAN OF GYNÆCEUM

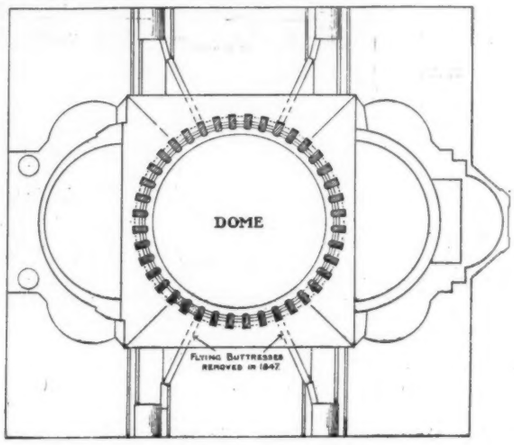


FIG. 6. PLAN AT BASE OF DOME

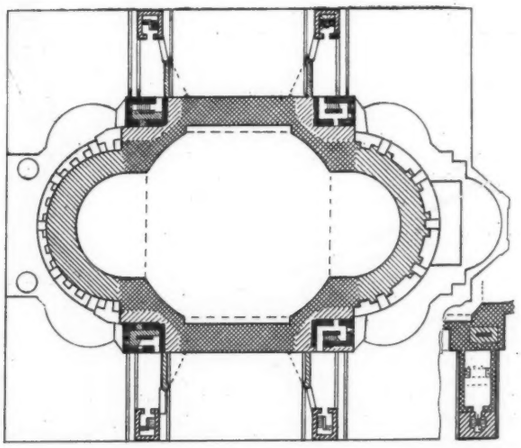


FIG 5. PLAN AT LEVEL OF G.H. (IN FIG 10)

FIG. 4. PLAN AT E.F. (IN FIG 10)

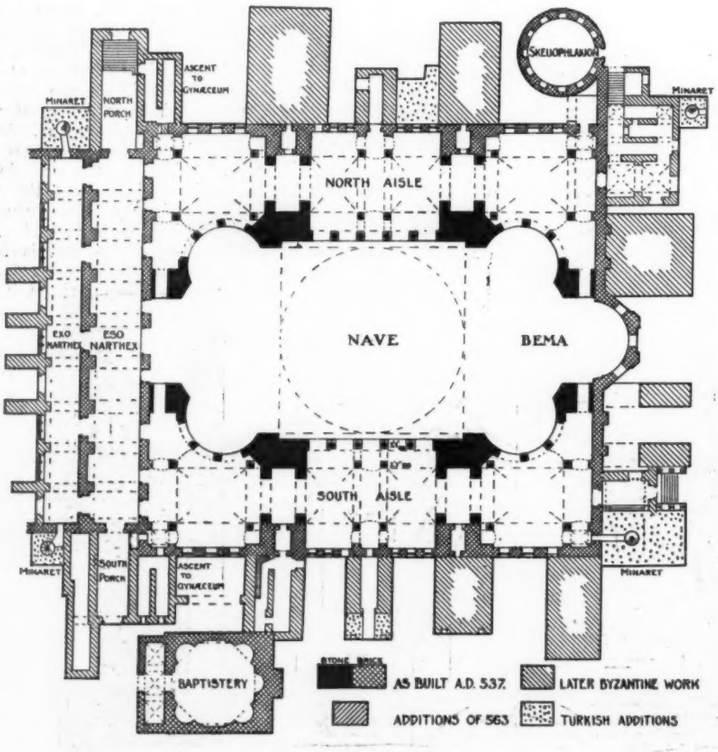


FIG. 1. PLAN OF GROUND FLOOR

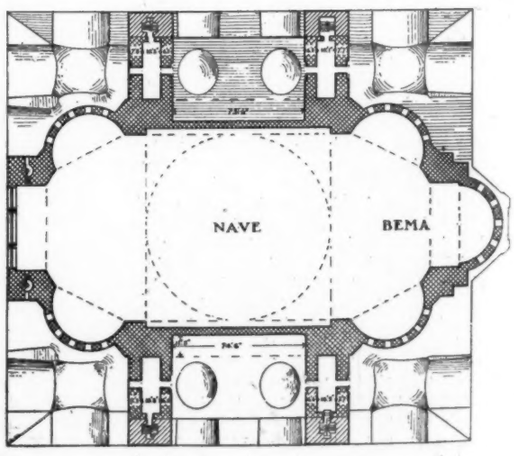


FIG 3. PLAN ABOVE ROOF OF GYNÆCEUM

CHURCH OF ST. SOPHIA. CONSTANTINOPLE.

SCALE OF FEET

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ILLUSTRATIONS.

The Abertillery and District Hospital, Aberbeeg.

This hospital, which was designed and supervised by Mr. Walter Rosser, M.S.A., Newport, and erected by Mr. John H. Monks, Newport, stands on an elevated site of about nine acres near Christchurch, Aberbeeg. It has been designed with a view to the administration being carried out with as small a staff as possible, not only by way of compact planning but also by eliminating unnecessary details and designing and installing all the fittings with a view to reducing labour. The building has also been arranged to allow for future extensions, and sufficient accommodation has been provided in the Administrative Department to meet the needs of such extensions.

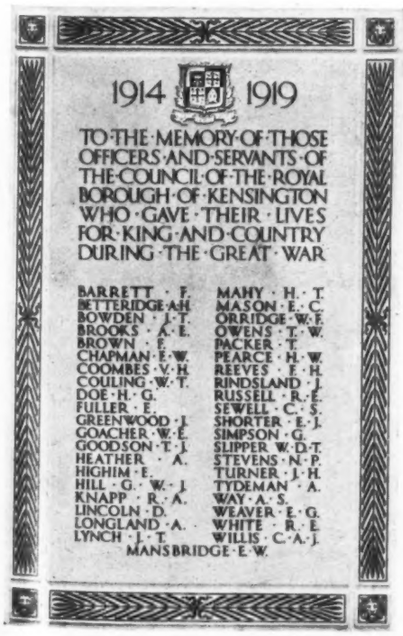
The building consists of three blocks, the first being the Admission and Administrative Departments on the ground floor and staff quarters on the first floor. The Admission Department chiefly consists of waiting-room, receiving-room, examination-room, surgical dressing-room and a room for eye, ear and throat treatment. The Administrative Department comprises, on the ground floor, porter's-room, waiting-room, surgeons' and nurses' rooms, kitchen, servery, kitchen staff sitting-room, scullery, and various stores, and, on the first floor, matron's bedroom, nine bedrooms for the staff, and large meal, recreation and reading rooms.

From the main entrance in the Administrative block, the main corridor gives access to the second block, which contains two wards, right and left, together with their units. The wards have an axis from north to south to obtain the maximum amount of sunshine. A window is arranged on each side of each bed. Each ward has accommodation for sixteen beds, with a side ward and day-room. Adjoining the day-rooms are verandahs. The ward units consist principally of duty-rooms, sisters' rooms, ward sculleries, laboratory, surgical dressing-room, linen and patients' clothes stores, &c. The third block, at the end of the main corridor, contains the operation and X-ray departments. The former includes a north-lighted operation theatre (the walls of which are lined with large slabs of "Vitrolite"), rooms for anæsthetics, sterilising, instruments, supplies, and blanket warming, together with robing-rooms for surgeons and nurses. The X-ray block consists of X-ray room with dressing recess, sisters' room, treatment-room and dark-room. A separate block has been erected in close proximity to the hospital in which the electrical generating plant has been installed, and the hospital will be lighted throughout by electricity. The whole of the electric installation has been carried out by Messrs. Marler & Co., Ltd., Newport. At the back of the generating station a small temporary mortuary has been provided.

Drawings have been prepared for the erection of a laundry, permanent mortuary, and garage, and this work will be proceeded with at a later date when the necessary funds have been raised.

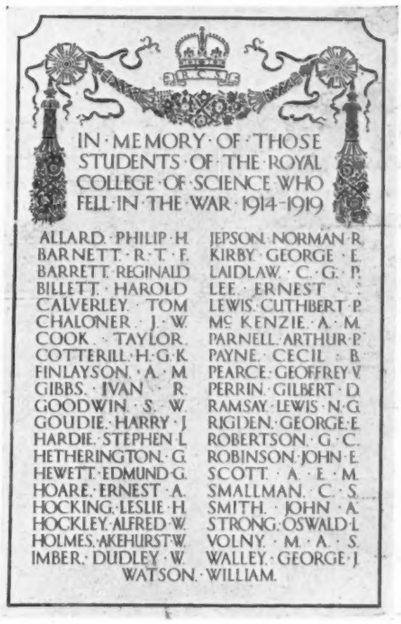
The building is erected throughout of brick, the front elevation of the Administrative block being faced with special hand-made rustic bricks obtained from Messrs. G. Tucker & Sons, Loughborough, and the remaining elevations with common brickwork rough-casted and distempered. The roofs are covered with hand-made rustic tiles manufactured by Messrs. S. & E. Collier, Ltd., Reading, which harmonise with the natural surroundings. In the building all angles are rounded, and in most of the rooms and corridors the dados are tiled with special tiles supplied and laid by Messrs. Craven Dunnill & Co., Ltd., Jackfield, and the walls and ceilings above white enamelled. The various floors are laid in terrazzo and "Linolith" (laid by the Marble Mosaic Co., of Bristol) and teak. Practically the whole of the internal joinery is of teak. Inter-communication telephones have been installed throughout.

Messrs. Beaven & Sons, Ltd., Newport, supplied the following:—A system of low-pressure accelerated heating throughout; a system of accelerated hot-water supplies; equipment of low-pressure steam cooking throughout; supply and equipment of the whole of the sanitary fittings; baths, special sinks, lavatories, &c.; water supplies, including inside and outside fire services.


1914 1919
TO THE MEMORY OF THOSE OFFICERS AND SERVANTS OF THE COUNCIL OF THE ROYAL BOROUGH OF KENSINGTON WHO GAVE THEIR LIVES FOR KING AND COUNTRY DURING THE GREAT WAR
BARRETT · F.
BETTERIDGE · A. H.
BOWDEN · J. T.
BROOKS · A. E.
BROWN · F.
CHAPMAN · E. W.
COOMBES · V. H.
COULING · W. T.
DOE · H. G.
FULLER · E.
GREENWOOD · J.
GOACHER · W. E.
GOODSON · T. J.
HEATHER · A.
HIGHM · E.
HILL · G. W. J.
KNAPP · R. A.
LINCOLN · D.
LONGLAND · A.
LYNCH · J. T.
MANSBRIDGE · E. W.
MAHY · H. T.
MASON · E. C.
ORRIDGE · W. F.
OWENS · T. W.
PACKER · T.
PEARCE · H. W.
REEVES · F. H.
RINDSLAND · J.
RUSSELL · R. E.
SEWELL · C. S.
SHORTER · E. J.
SIMPSON · G.
SLIPPER · W. D. T.
STEVENS · N. P.
TURNER · J. H.
TYDEMAN · A.
WAY · A. S.
WEAVER · E. G.
WHITE · R. E.
WILLIS · C. A. J.

Kensington Borough Council War Memorial Tablet.

Mr. Trenwith Wills, A.R.I.B.A., Architect.


IN MEMORY OF THOSE STUDENTS OF THE ROYAL COLLEGE OF SCIENCE WHO FELL IN THE WAR 1914-1919
ALLARD · PHILIP · H.
BARNETT · R. T. F.
BARRETT · REGINALD
BILLETT · HAROLD
CALVERLEY · TOM
CHALONER · J. W.
COOK · TAYLOR
COTTERILL · H. G. K.
FINLAYSON · A. M.
GIBBS · IVAN · R.
GOODWIN · S. W.
GOUDIE · HARRY · J.
HARDIE · STEPHEN L.
HETHERINGTON · G.
HEWETT · EDMUND G.
HOARE · ERNEST · A.
HOCKING · LESLIE · H.
HOCKLEY · ALFRED · W.
HOLMES · AKEHURST W.
IMBER · DUDLEY · W.
JEPSON · NORMAN R.
KIRBY · GEORGE · E.
LAIDLAW · C. G. P.
LEE · ERNEST
LEWIS · CUTHBERT P.
Mc KENZIE · A. M.
PARNELL · ARTHUR P.
PAYNE · CECIL · B.
PEARCE · GEOFFREY V.
PERRIN · GILBERT · D.
RAMSAY · LEWIS · N. G.
RIGDEN · GEORGE · E.
ROBERTSON · G. C.
ROBINSON · JOHN · E.
SCOTT · A. · E. · M.
SMALLMAN · C. · S.
SMITH · JOHN · A.
STRONG · OSWALD L.
VOLNY · M. · A. · S.
WALLEY · GEORGE · J.
WATSON · WILLIAM.

War Memorial Tablet at the Royal College of Science.

Mr. Trenwith Wills, A.R.I.B.A., Architect.

New Business Premises, Cardiff.

The elevation of the business premises at Queen-street, Cardiff, for Messrs. Marments, Ltd., will be carried out in Portland stone with cast-iron window panels and steel casements. The contract has been let to Messrs. Wm. Symonds & Sons, of Cardiff, at the sum of £26,000, exclusive of all shopfitter's work, and the work was commenced about the middle of September.

The architects are Messrs. Ivor Jones & Percy Thomas, AA.R.I.B.A., of Cardiff.

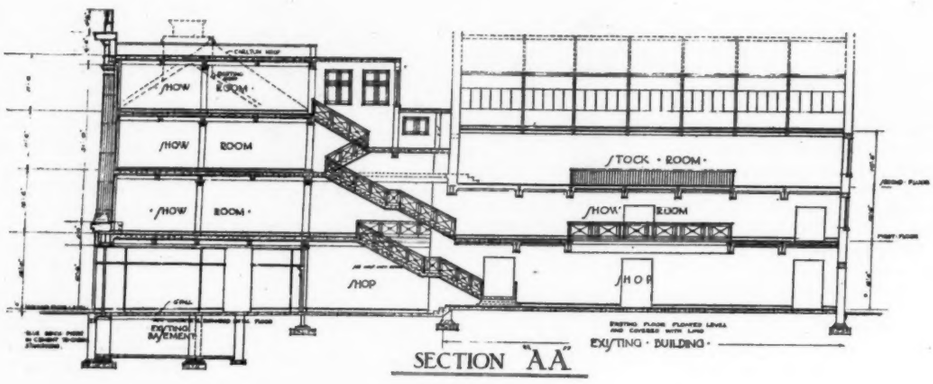
BOOK REVIEW.

The Administration of the Town-Planning Duties of Local Authorities. A Supplement to "The Case for Town Planning," By Henry R. Aldridge, Secretary National Housing and Town-Planning Council. (The National Housing and Town-Planning Council, London.) Price, 8s. 6d. net.

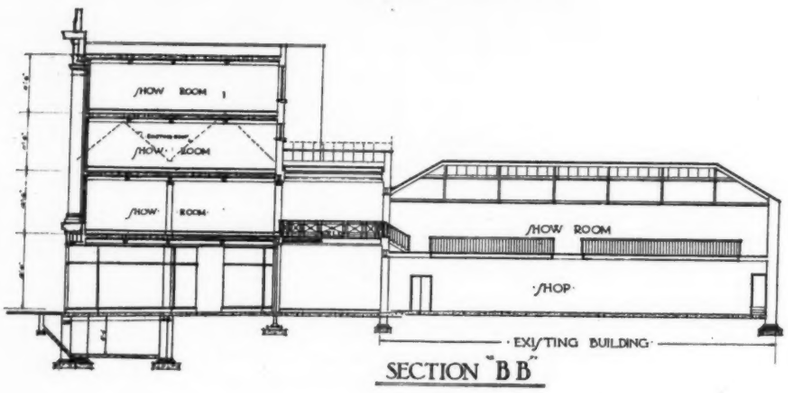
The "Case for Town Planning," to which this book is a supplement, was published in 1915 and the author, in his preface, expresses the hope that that work and the present volume will render a real service by providing a practical guide to those upon whom will fall the task of preparing the town-planning schemes which under the Acts 1909 and 1919 all urban authorities are required to produce within three years of 1925. The object of this volume is to bring the subject up to date since the passing of the Town-Planning Act of 1919, and the material sections of the Act are set out in Chapter I and the various documents relating to town planning issued by the Ministry of Health (which has now replaced the Local Government Board) are contained in Chapter III.

But this is no mere work of "paste and scissors," for the author, with a thorough knowledge of his subject, is also gifted with great clearness of expression and in the chapters that deal with the Act and its bearing on the previous Act he provides a most useful guide to this most complicated subject. The form in which the matter is presented is no small consideration, and here also this work leaves nothing to be desired as the print is admirable and the text so arranged with ample head notes as to enable the reader with the least possible trouble to find the information given. The last two chapters deal respectively with the zoning movement in America and the French law concerning the preparation of town and village planning schemes. In Chapter VI the author states that the slum clearance and rehousing powers conferred by section 9, subs. (1) of the Act of 1919 will be fully discussed in a work on housing which he has in preparation, but in the present work he refers to this section and points out that although it has been urged that the powers conferred by this section are too drastic, insanitary slum areas are a serious danger to public health, even more hurtful than food unfit for human consumption, but no protests are raised to "harsh measures" being applied to the latter and he urges that any attempt to repeal this section should be strongly resisted.

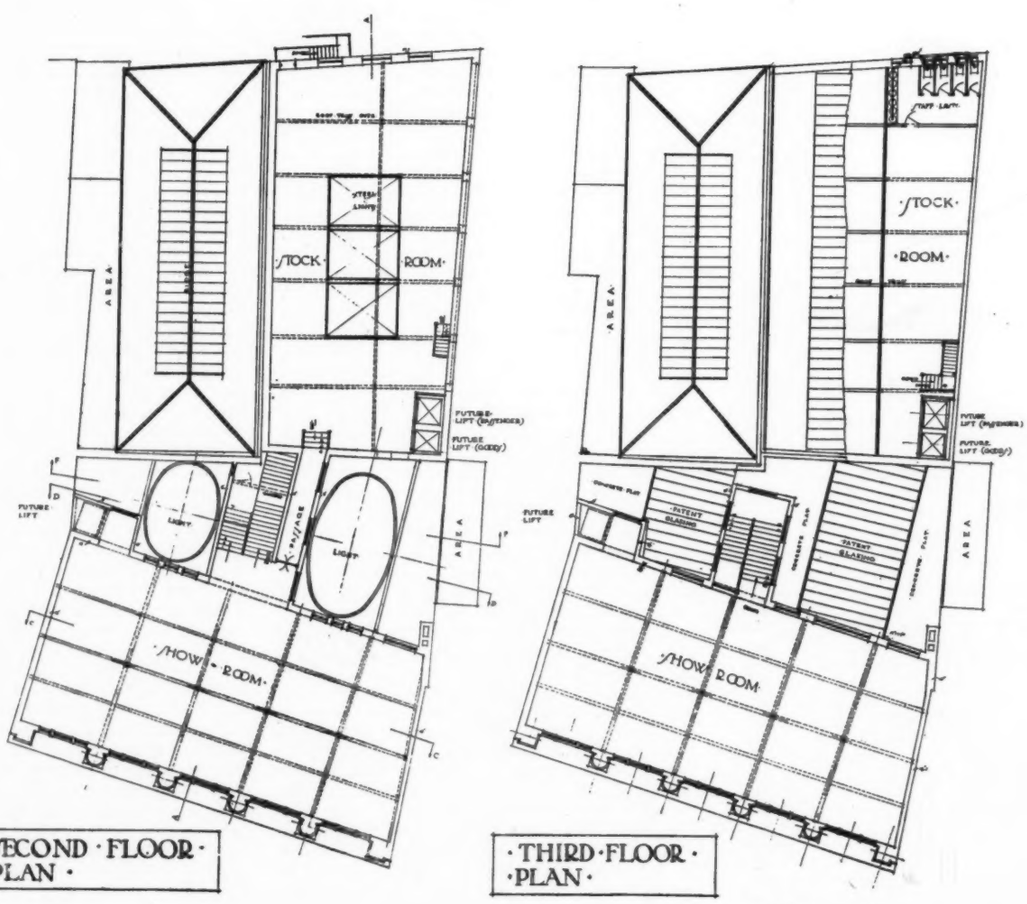
The author welcomes the introduction of the standard of 12 houses to the acre, which he thinks may be regarded henceforward as secure in all progressive communities, and his observations on housing schemes and by-laws as affected by section 24 of the Act of 1919 are of interest. Space compels us to refer readers to this volume itself for information on that and many ther points.



SECTION "AA"



SECTION "BB"



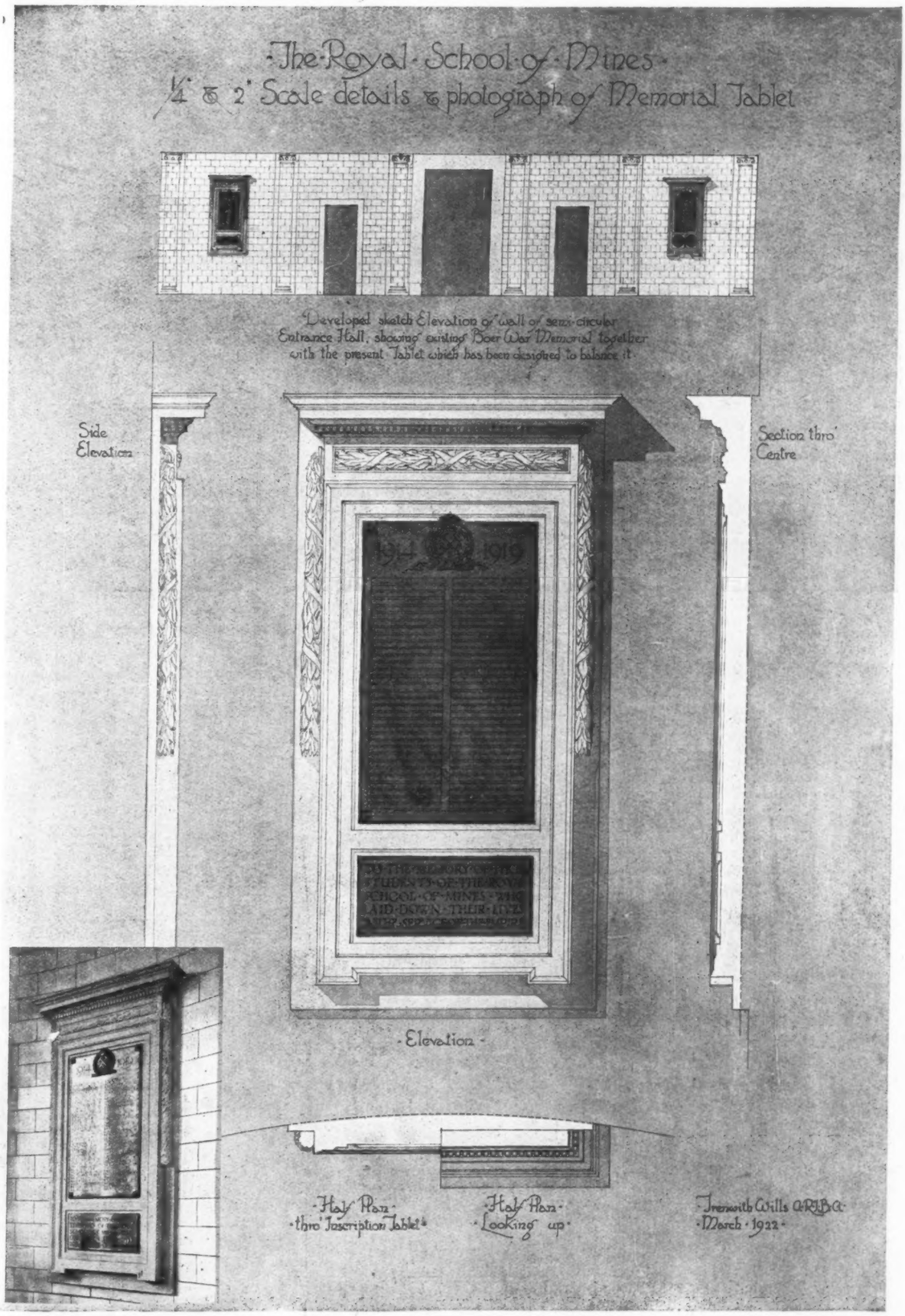
SECOND FLOOR PLAN

THIRD FLOOR PLAN

SCALE 8 FEET TO 1 INCH

New Business Premises, Cardiff.

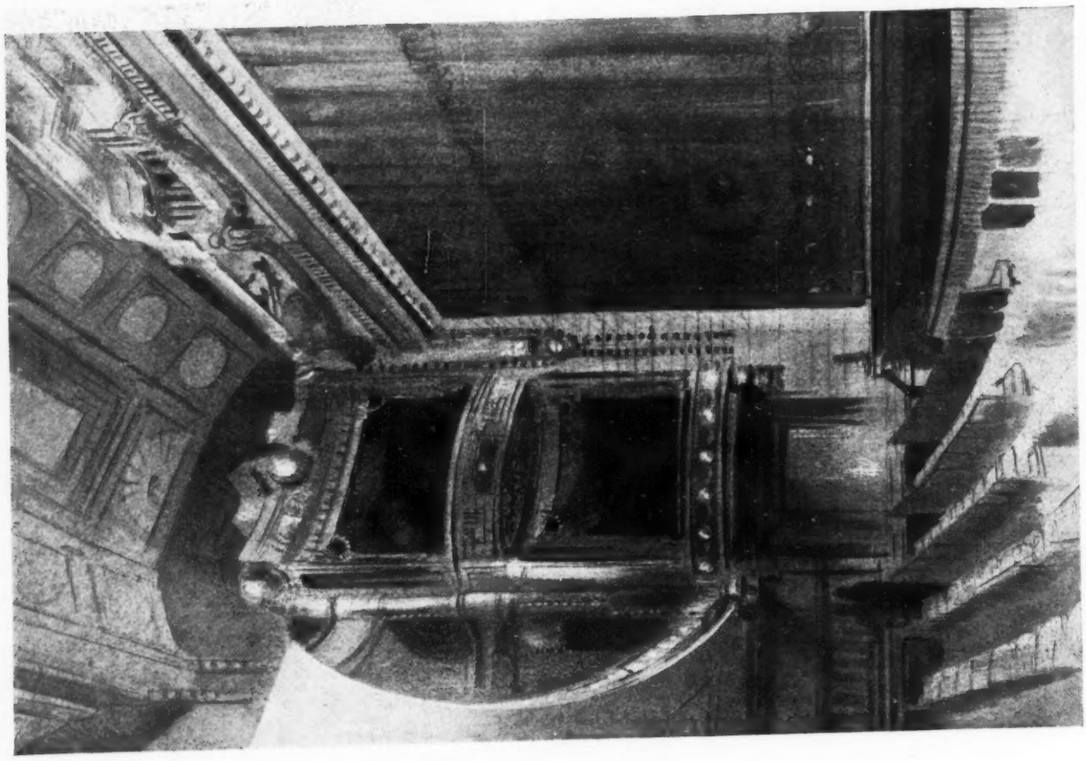
MESSRS. IVOR JONES & PERCY THOMAS, AA.R.I.B.A.

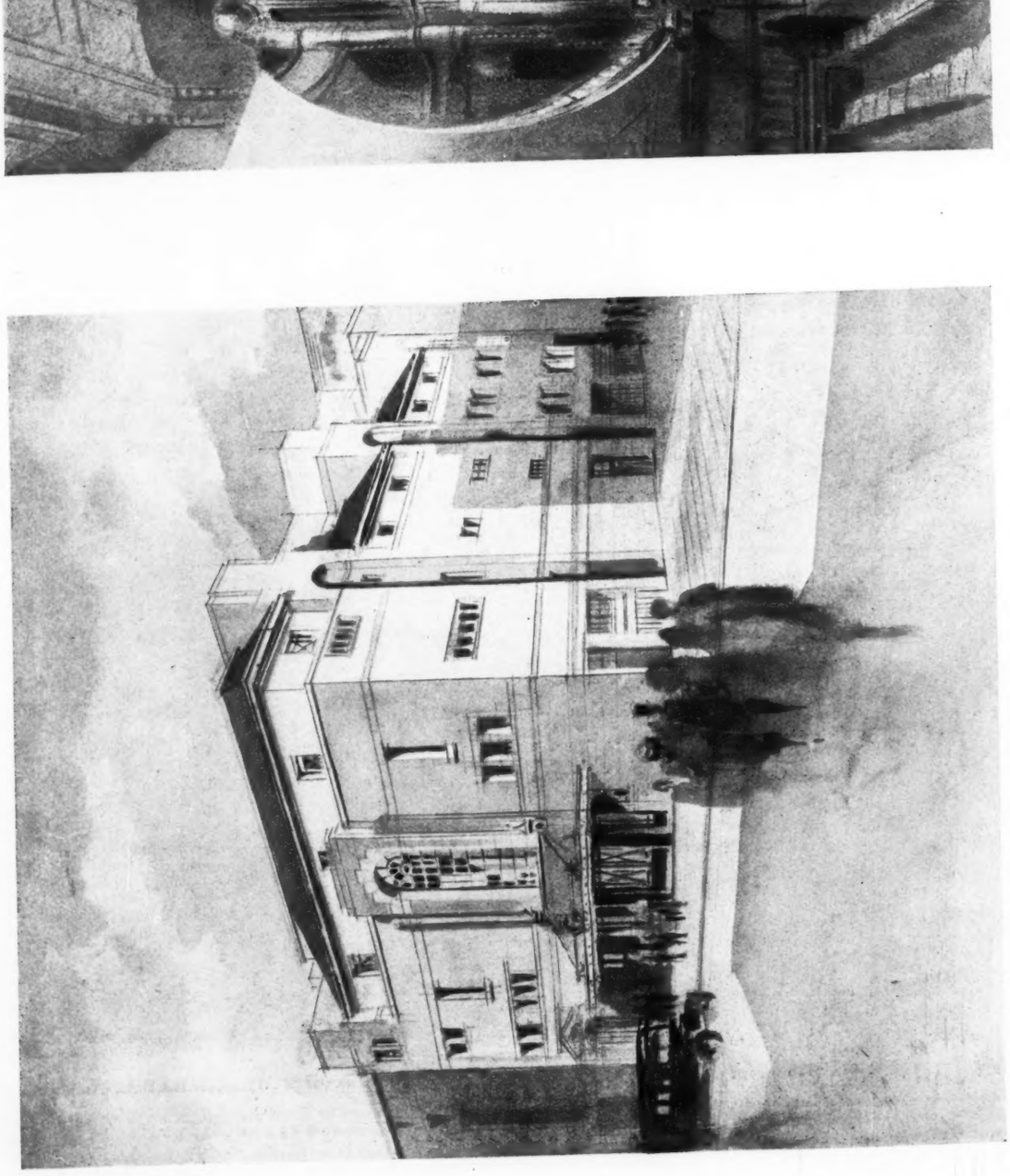

The Royal School of Mines
¼" to 2" Scale details to photograph of Memorial Tablet
Developed sketch Elevation of wall of semi-circular Entrance Hall, showing existing Boer War Memorial together with the present Tablet which has been designed to balance it
Side Elevation
Section thro' Centre
1914 1919
Elevation
Half Plan thro' Inscription Tablet
Half Plan Looking up
Trenwith Wills A.R.I.B.A.
March 1922

R.A. EXHIBITION, 1922

Wall Tablet for the Royal School of Mines, South Kensington, S.W. MR. TRENWITH WILLS, A.R.I.B.A., Architect.

[The tablet was designed to balance an existing tablet in the school, erected in memory of those who fell in the Boer War. The tablet is carried out in Portland stone with carved swags; the panels for the inscription and the names are in sheet bronze, lettering incised. The rosettes and the school crest were modelled and cast in bronze. The modelling and the execution of the tablet was carried out by Mr. Herbert Tyson-Smith, sculptor, of Liverpool, the cost being about £200.]





Proposed New Theatre in Covent Garden. MR. ERNEST SCHAUFELBURG, Architect.

[Some particulars regarding this proposed new theatre are given on p. 638.]

THE COMPLEAT ARCHITECT.

By DUDLEY HARBRON.

IV.—WORKMANSHIP.

WORKMANSHIP, in reality a simple matter, has in these days become exceedingly complex. Of all departments of knowledge relating to an architectural education it has provoked the greatest amount of interest and discussion.

This is in part due to the widespread influence of the phenomena that have followed in the wake of the application of mechanical forces to industry, known as "the industrial revolution," that have affected not only the building crafts but the whole of the handworkers, who, prior to the introduction of steam power, supplied the needs of mankind. In part also it is due to the forceful writings upon the subject of speculative philosophers and ardent protagonists, as William Morris, Tolstoi, John T. Emmett, and, more recently, Professor Lethaby, G. D. Cole, and T. S. Attlee, to name some of those readiest to mind.

Although the theme has been fully dealt with, its importance is sufficient to excuse further consideration, however brief. For only by thinking on such questions is it possible to find where we stand. It is cowardly to avoid them from fear that the conclusions to which such thinking tends may prove unpalatable.

Briefly, society has developed through the successive stages of migratory, pastoral, village community, town, and now city agglomerations, with all their attendant needs and implications so picturesquely described for us by Anatole France in "Penguin Isle." Whether Anatole France and Professor Flinders Petrie are right in concluding that "fifteen millions of men laboured in a giant town" is the last phase that prefaces social dissolution, interesting though it is, is not within our province to discuss. At every stage within the limits of this transition the workers have been of two orders, bond and free, and the type of work that they have executed answers closely to their situation. The characteristics of slave labour being simplicity and repetition demand infinite patience but little thought; whereas the free worker is imaginative, fanciful, individual, and spontaneous.

With the new orientation of men's thoughts following the advent of Christianity and the decline of the Roman Empire, the liberated worker within his guild attained a corporate importance in advance of anything previously reached, within which, educated and graded by his seniors and fellow-workers, he applied his hand and mind to work in which he took care and pride, and through which he expressed his thoughts and ideas. He knew not any more than the originator of the skyscraper that he was accomplishing anything remarkable. It is a long time since a man got, wrot, and sold the result of his labour. To-day, and for the past fifty years, the dominant factor has been the machine.

Coincident with the introduction of the machine and the factory system has grown the trade-union movement organised to protect the worker. Between these two contending forces craftsmanship has sunk to a low ebb. Lamentably, the motto of the Glovers of Perth, "The perfect honour of a craft or beauty of a trade is not in wealthe but moral worth, whereby virtue gains renowne," no longer actuates the body of manual workers to-day, though it is still true. It is useless to blame trade unionism, which has been obliged to concentrate its forces upon the maintenance of a reasonable material status for the worker. It has surrendered to the employer the vocational training of the worker, and has left to the co-operative society his political education. This is the complicated situation to-day.

It seems useless to consider any state of society in the future in which the machine will not play an increasingly active part. Machinery as it affects workmanship has come to stay. The welfare of great populations and the standard of comfort expected by them preclude its supersession. I am quite willing to admit that our forefathers managed much better without it, because apart from any ethical consideration the individual fashioning of anything conduces to contentment. As at present directed machinery is a very doubtful blessing, but we must accept the inevitable. Machinery is the new fact.

By accepting the exigencies of the machine and allowing it to regulate our treatment, to suggest, even dictate, to ourselves, rather than try to make it interpret our purely reminiscent handicraft fancies, is progress to be made. Mr. Donn Barber at the R.I.B.A. recently, in reply to a question, "whether America is forming a tradition of these building crafts . . .," said, rather strangely, ". . . speed in construction is one of the great factors." I must confess that though I know that water-colour artists obtain the effect of shifting cloud and running water by lightning strokes, this is the first time I have heard that haste left a desirable stamp upon building work. If it does, then it is the stamp of the machine, something newly perceived.

In building, machinery does not yet hold the paramount place it occupies in many other industries; there are still numerous operations performed directly by the hand of the worker.

There is unquestionably an ethical value in handicraft. The expression of pleasure in work; a contribution, but insignificant, so it be individual, brings to the beholder a sense of satisfaction. The conditions of modern building, the contract system, the need for conformity to conditions imposed from without, do not leave much latitude for the worker.

We have raised a body of men capable of interpreting half-inch and full-size details in a mechanical sort of way, and we are vaguely disappointed when we find that "something" has been missed which we thought was there. We want a workman capable of feeling the subtleties and interpreting them as nearly as a composer desires his music to be rendered by the executant, and not in the halting five-finger exercise bungle of the tyro. If we want these things then we must be simple in our demands, patient, explanatory, and encouraging—not merely querulous. There are many items that cannot be detailed or specified. We must watch and learn from the bricklayer, the mason, and the carpenter, the difficulties and the possibilities of his occupation. There is always room somewhere to give his inventive mind a chance to allow him latitude. I saw once a surface swept by a plasterers' float which had been allowed to set as left after each stroke, forming on an otherwise plain surface an unconscious pattern. Only the other day I showed a plasterer a photograph of some old decorative plaster executed by a craftsman. I made no comment, but he replied, sadly, "That's what I should have done, only the foreman used to say, 'Get on with the job,' whenever I tried to play with my work." It should be practicable to allow the worker to play over his work to-day.

MEETINGS.

SATURDAY, *October* 28.

Architects' and Surveyors' Assistants' Professional Union.—Visit to R.N. College and Greenwich Hospital. Meet at College Gate, 3 p.m.

MONDAY, *October* 30.

Architectural Association.—Mr. S. Hamp on "The Architect's Niche: His Duty to Humanity." At 34, Bedford-square, W.C.1. 7 p.m.

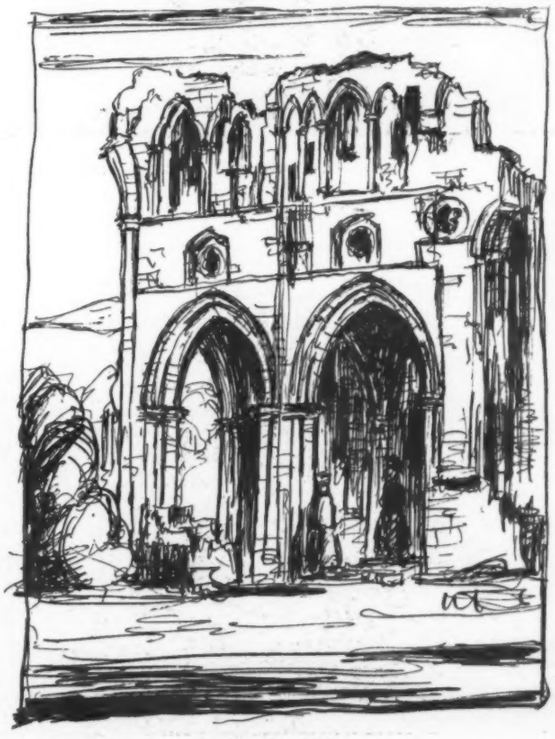
WEDNESDAY, *November* 1.

Royal Archæological Institute.—Mr. C. H. Bothamley on "Carcassonne." At Burlington House, Piccadilly, W. 1. 5 p.m.

Institution of Sanitary Engineers.—Annual Dinner. At Holborn Restaurant, W.C.1. 7.30 p.m.

THURSDAY, *November* 2.

Auctioneers' and Estate Agents' Institute.—Mr. J. A. Rosevear on "Compulsory Town-Planning and Future Estate Development." At 34, Russell-square, W.C.1. 7.45 p.m.

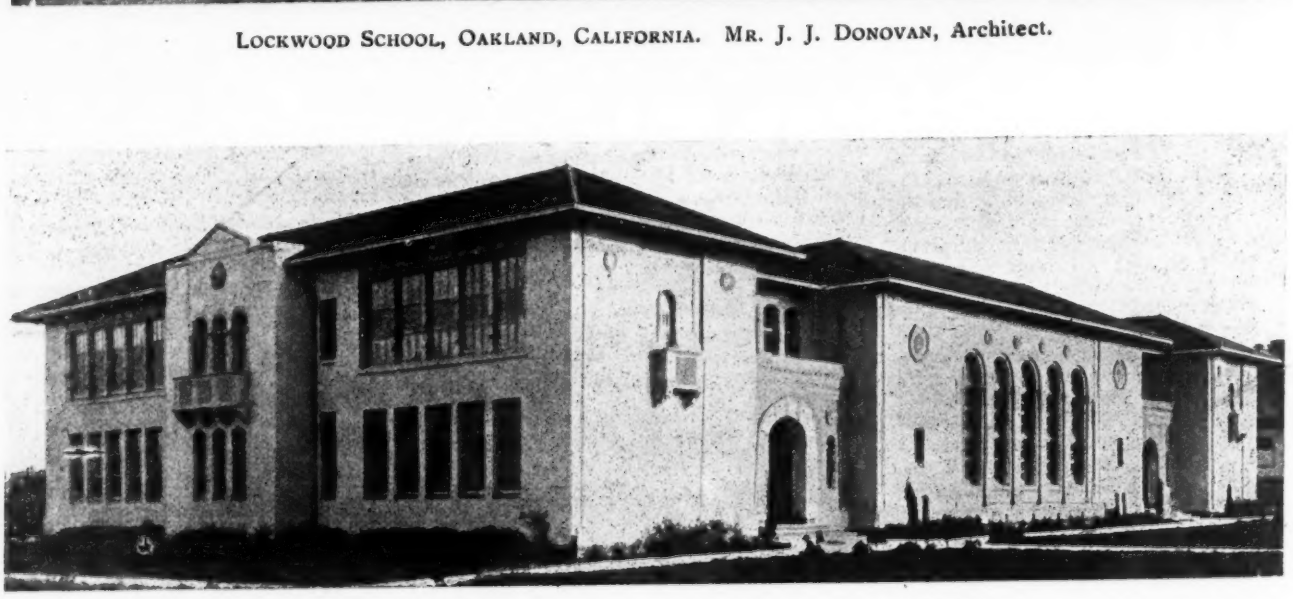


Dryburgh Abbey.

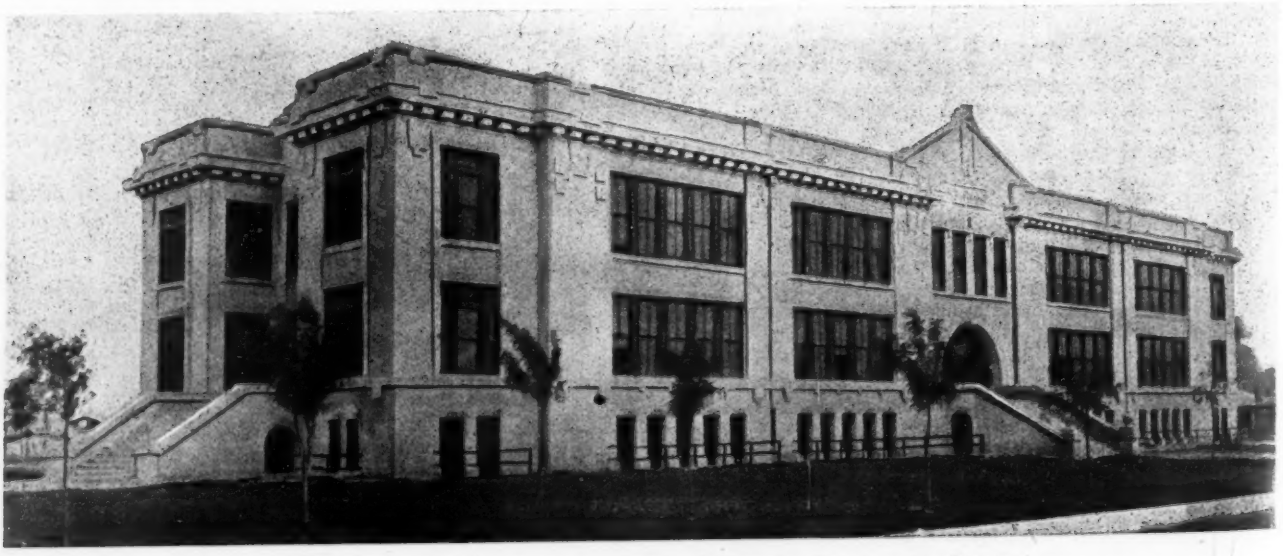
Sketch by MR. GORDON HEMM, A.T.P.I., who has been appointed to take charge of a new evening department in Architecture at the Southport School of Art.

TECHNICAL HIGH SCHOOL, OAKLAND, CALIFORNIA. MESSRS. FROST & FROST, Architects.

LOCKWOOD SCHOOL, OAKLAND, CALIFORNIA. MR. J. J. DONOVAN, Architect.



SCHOOL AT WATSONVILLE, CALIFORNIA. MR. W. H. WEEKS, Architect.



SCHOOL AT ALTA VISTA, TEXAS. MESSRS. FROST & FROST, Architects.

Concrete School Buildings in America. (*See p.* 623.)

THE INSTITUTE OF ARCHITECTURAL MODELLERS.

WE give below an abstract of a paper compiled by Messrs. H. Didier, A. J. Oakley, and C. J. Redmond, and read recently before the Institute of Architectural Modellers. The Institute, of which Mr. E. H. Hammond is the President, has been formed (1) to encourage and uplift the art of modellers and designers, and to maintain the dignity of the art in all its branches; (2) to secure unity of action in all matters of importance connected with the profession; (3) to abolish any abuse detrimental to the welfare of the members; (4) to promote and secure the approval and support of all bodies of architects or any other institution interested in the profession; (5) to make the qualification of membership of the Institute a guarantee of proper training for the profession; and (6) to hold exhibitions of works in connection with the profession, and to hold lectures.

In the course of the paper, which mainly dealt with the objects of the Institute, the authors stated that at present the modeller's status was *nil*—he had no standing whatever except his own personal skill. The profession was poor, caused through the intrusion of men carrying out work who were not recognised or capable modellers. The stimulus should come from the modeller himself, who dealt with the decorative portion of the building, whose art was his life, and whose one aim and object was to maintain the high tenets and traditions of his craft. His observance of the styles handed down to him from time immemorial, and his anxiety to maintain the perfect beauty of those styles, was to him a religion, and any infringement against those styles was, to him, a sin. The responsibility which he had when entrusted with modelling placed him above the level of an ordinary mechanic, and he should be looked upon not as a mere tool in the hands of others but as an artist, worthy to produce responsible work which was open to the criticism of those who designed great buildings.

Recognising the dead level in architecture, it must necessarily follow that the same applied to modelling and designing, because the history of art taught how inseparable the two were. Architecture and sculpture were blended together; in many cases a brilliancy of richness resulted, but in other cases a building quite lifeless was produced by some present-day architects. The best artistic productions were born through the perfect understanding by artists of the spirit of their time. Egyptian, Greek, and Gothic arts were typical and great examples. It pleased the artists of those periods to give to the world splendid specimens of their work. Other periods of art, if not so great, were just as characteristic of their age, and gave to us knowledge of past beliefs and symbols; they spoke of faith, liberty, virtue, and every human emotion.

What was true of the past was true of to-day; present art was telling its own story, which was not one of great masterpieces. It was necessary to encourage and uplift art and maintain its dignity, and they desired to know what discouraged and kept down the art of the modeller and designer; and which was the way to stop the decadence of the art in all its branches.

It seemed difficult to realise that in such a century as this their art did not reflect the wonderful achievements, scientific discoveries, and unimaginable exploits which were so numerous now that there was hardly time for enthusiasm over anything. They were so practical that they had no time to admire individuality, but thought only of reproduction and of the creation of quantity, and in that feverish haste they were playing with their nerves to such an extent that they would not answer their successive emotions: the imaginative self of the artist was submerged by the practical element of the craft, and it was thus that artists were asked to race with their time. Artistic productions were no longer works of careful thought or enthusiasm, but an adaptation of bits taken from stock.

Did that mean that they were all inferior to the old masters? Emphatically No. Many of them had or could get enough knowledge to enable them to express anything desired. They had clever men enough, but while their quickness satisfied the commercial men the lack of feeling in the production caused by the environment of rush and commercialism resulted in many architectural failures. This century, wonderful as it was, gave nevertheless the impression that it was incomplete—the practical side thrived at the expense of the idealistic, and artistic productions became almost impossible. For the tools to express poetry of the soul the mind must be quiet, and not bound by so many restrictions. Initiative could never be shown while commercial and industrial questions predominated. For instance, the price was fixed beforehand, and often the modeller had no knowledge of the destination of his work, so that it was an impossibility to show personality or artistic expression; in a word, they were mere tools, working very much, at times, in the dark. That "working in the dark" contributed to the perpetuating of the standard of mediocrity they deplored to see around them, despite the science of their time, with its wonderful advantages, the knowledge of the architectural masterpieces of the past, experience, wealth, and the world's materials at their disposal, all of which should assist them to produce as great achievements as those of the olden days.

Architecture was beset by numerous difficulties, but they felt that no chance should be left for the slightest misunderstanding between architects and modellers. Everyone knew that conception differed with every being, and the more intermediators the greater the difference between the architect's desires and the modeller's expressions of them. They now found a sympathy among architects to connect themselves more directly with the modeller's profession, and that was a real step in the way of realising their ideals.

Beauty must become the enveloping of modern life, and to attain that object the first and most fitting place to require attention was the work of building—for was not building the scenery of life? Very much had been said about the public's artistic ignorance, but up till now artists had done nothing worth mentioning to do propaganda for their ideal, and yet they expected inartistic people to ask for what they did not know. As artistic education, appreciation, and tastes were created by environment, so every artistic creation in building must help to influence public taste, and, following that consideration, artists ought to determine to put not only the best of themselves in their work, but to resist everything which deteriorated the art. They ought to remember that frontages were their showcards, creating artistic interest which could make their art understood, loved, and prosperous.

Architecture and sculpture working conjointly for the decorative part of the building would assure an artistic benefit, resulting from the understanding of the mind and purposes of the architect by the modeller, who could in his turn exercise his creative mind in his own branch. Well understood, his art gave the artistic finish—but badly handled it could mar the highest architectural conceptions. It was possible that a committee of artists of all branches could be set up to decide if there were any artistic objections in every new creation. They could then hope to see around them beautiful buildings, planned with consideration of the surroundings, combining effects of greatness, beautiful and inspiring ensembles, speaking of human genius and of the dignity and knowledge of an epoch. Architects' and modellers' works were spoiled every day and made unsightly, and he was not even sure that a great commercial benefit was gained. Advertising boards or signs fought each other, and the only lasting impression was the nightmare of all these letters, big and small, playing havoc in the general outlook and the peace of mind. They were to be blamed if, knowing that, they did nothing to try to improve those things. If advertising signs could not be dispensed with, there might be suggested the utilisation for them of the beautiful arts of ceramic, glass, metal, etc., even low reliefs, illustrating particulars about the products to be advertised, but that must be understood to be part of the building, not over-decoration, and regulated to keep in harmony with the surroundings.

Central Avenue School, Madison, New Jersey. (Built in Concrete.)

CONCRETE SCHOOL BUILDINGS.

WAR-TIME industrial conditions and post-war finance have resulted in a very considerable amount of school building being postponed, and in view of the inquiries recently instituted by the Manchester Corporation as to the uses of concrete for school buildings, the illustrations on this page and the next of concrete schools in America are of interest.

These illustrations of schools in the United States show the possibilities of concrete for this type of building, and it is claimed that apart from the pleasing designs which may be obtained with this material, and its economy in first cost and upkeep, its fire-resisting properties are a considerable factor in its favour when used for a building in which upwards of a thousand children may be congregated at one time.

LEGAL SECTION.

NOTES ON CURRENT CASES.

Rating.

Some important decisions have recently been given on the subject of rating. In our issue for March 31 we referred to the case, Double *v.* Southampton Assessment Committee, which is now reported (1922, 2 K.B. 213). In that case, the Assessment Committee had decided to have a revaluation of certain classes of properties in their area, and an eminent firm of rating surveyors were engaged to make the assessments. At the date the supplemental valuation list was deposited 127 properties had been re-assessed, but 327 remained to be assessed, and in the supplemental list the 127 properties were included at the increased value; the 327 properties remained at the old valuation, thus properties of the same class were assessed on a different basis and the Court held that the assessment was unequal and unfair.

We may now refer to the case, Stirk & Sons, Ltd., *v.* Halifax Assessment Committee (1922 1 K.B. 264). In that case the Assessment Committee had passed a resolution on January 14, 1920, that pursuant to the provisions of the Union Assessment Committee Act, 1862, a supplemental valuation list should be made, and that such supplemental list should contain a list of all rateable properties under the following descriptions, viz., mills or factories, workshops, warehouses, shops where the tenant did not reside on the premises or where so residing the premises were over £52 gross rental, cinemas, music-halls, and other places of entertainment; that in such list the value of such premises appearing in the valuation list in force should be increased by 25 per cent. over the rateable value of each individual assessment of properties of the description aforesaid, and that with the addition of such 25 per cent. the rateable value of each individual assessment as aforesaid should be inserted in such supplemental valuation list. This resolution was put into operation and the valuation was increased without any individual valuation of the separate hereditaments. The poor-rate, having been levied on this assessment, Messrs. Stirk objected, and finally appealed to Quarter Sessions. The main ground of objection was that the assessment was bad, as no separate valuation of the properties had been made, and the fact that all dwelling houses not attached to trade premises were excluded from the list and from the 25 per cent. increase was in itself sufficient to show that the list was unequal and unfair.

Quarter Sessions allowed the appeal and the Assessment Committee then appealed to the High Court. The Divisional Court held that the Assessment Committee had not made a valuation list within the meaning of the Act at all; that they had not, as they ought to have done, made an assessment on individuals, but only on classes; and that the valuation list was unequal and unfair, using that term in no objectionable sense. As regards the first point, the Court pointed out that under section 14 of the Union Assessment Committee Act, 1862, so far as the original list was concerned the overseers must make a list and consider each property separately, and that as regards supplemental lists under sections 25 and 26 they have no greater powers in making the new list than they have in making the original list. This means that individual hereditaments must be considered and not as had been done in this case whole classes of hereditaments. The Court showed how the latter course operated unfairly, for the general application of the 25 per cent. increase ignored such elements as the position of the property, its character and age.

The next case we must refer to is Shillito *v.* Hinchliffe (1922, 2 K.B. 236) which turns on procedure. In this case, Hinchliffe was summoned for the non-payment of rates and a number of points were taken, some of them relating to the point decided in Stirk's case. That case related to the poor-rate levied in the year 1920–1921. Since that decision a consolidating Act, the Halifax Corporation Act, 1920, had come into force under which, for the year 1921–1922, all the three rates, the poor rate, the borough rate and the general district rate, were levied as one rate. The respondent had paid under protest the rates levied in the previous year, 1920–1921, but since under the decision in Stirk's case that rate was held bad because it was based on a provisional list improperly made with the 25 per cent. increase, he declined to pay the consolidated rate for 1921–1922 without deducting the amount of all the rates so overpaid in the previous year, 1920–1921, and the first half of 1921–1922.

On the application for a summons for distress, the justices had declined to issue the warrant, as they were of opinion that the respondent had shown cause for non-payment of the rate and that the case was covered by Stirk's case. The question for the Court was whether the decision of the justices was correct in law. The Lord Chief Justice thus stated the point: "The question is whether, on the hearing of a complaint that a person who was duly rated and assessed to the consolidated rate of the parish of Halifax and to certain water charges, had failed to pay such rate and water charges, the point whether the rate was in itself good could be taken before the justices."

The Divisional Court unanimously decided that the justices on the hearing of the application for a distress warrant had no jurisdiction to entertain the defence that the ratepayer was not liable by reason of flaws in the valuation list. Mr. Justice Shearman stated the law on this point, quoting from Ryde on "Rating": "Where a rate had been made by the overseers and allowed by the justices, on the application for a distress warrant to enforce the rate, if the objection amounts to an allegation that these functionaries have acted in excess of their jurisdiction it can be raised on the application, but if the objection is that they have acted erroneously in the exercise of their jurisdiction this objection cannot be entertained."

One or two observations may be made on this latter decision. The Court confined its decision simply to the point of jurisdiction and did not decide what amount of set off, if any, should be allowed; but, as a matter of fact, at the hearing the appellant had offered to accept payment less the sum consequent on the increase of 25 per cent. The rate for 1921–1922 had been made before the decision in Stirk's case, and that decision was delivered only the day before the complaint in this case was preferred; the respondent's contention thus involved a point as to the rate made in the previous year which he had taken no steps to challenge before the assessment committee. The case was argued for him on the basis that in all cases a ratepayer, when called upon to pay his rates, can take the point that the rate is bad and he is not liable to pay, which, the Court held, would involve a very serious extension of the law.

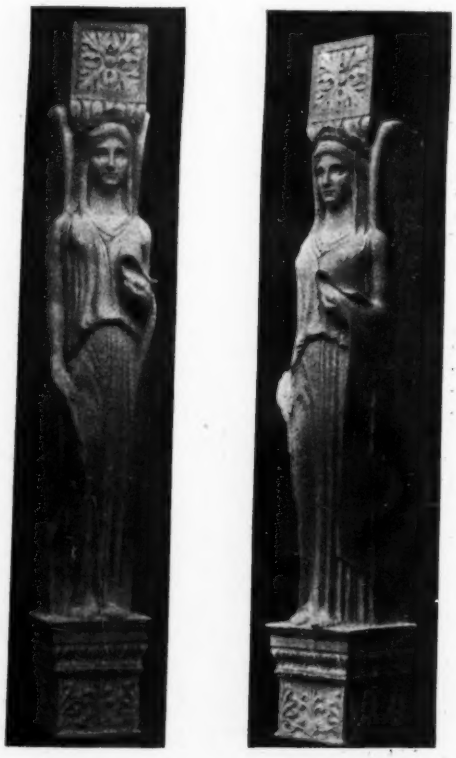
If the respondent had objected to the rate for the year 1921–1922 before the Assessment Committee on the ground that it had been held bad in law in Stirk's case, presumably (as was the case at the hearing) the 25 per cent. increase would have been conceded to be bad and would have been allowed him, but in these proceedings before the justices he was raising the question as to a rate made in the previous year and before the wrong tribunal.

One other point arises out of the above cases and that of Pointer *v.* Norwich Assessment Committee (*Weekly Notes*, July 29) which we noted last month—the question of notice to other ratepayers.

Section 18 of the Union Assessment Committee Act, 1862, provides, *inter alia*, "Any person who may feel himself aggrieved by any valuation list on the ground of unfairness or incorrectness in the valuation of any hereditaments included therein . . . may . . . give to the committee and to the overseers a notice in writing of his objection specifying the grounds thereof, and where the ground of any objection shall be unfairness or incorrectness in the valuation of any hereditament in respect of which any person, other than the person objecting, is liable to be rated, or the omission of such hereditament, also give notice in writing of such objection and the ground thereof to such other person."

The question of notice to any other persons was incidentally raised in several of the above cases. In Pointer's case the objector referred to the assessment of another property, although he had given no notice to the owner of that property, and the evidence of the assessment of that other property was admitted by the majority of the Court, Mr. Justice Shearman dissenting. The Lord Chief Justice pointed out that in this case the objector was not seeking to have the assessment of a neighbour raised, but only tendering the evidence to supply a standard from which to arrive at the rent at which his own property might be expected to let, and thus, far from saying the rateable value of the other property was placed too low, was founding his own case on the correctnesss of that assessment.

In Stirk's case, where the objector was contending that the assessment was bad, no notice had been given to other persons, and this point was raised on behalf of the Assessment Committee, for it was contended that as the objector complained that the assessment of the residential properties had not been raised notice should have been given to the occupiers of those residential properties. The Court pointed out that it would have been most inconvenient, if not impossible, for notice to have been given to every one of the occupiers of residential properties, and to this counsel replied that notice could have been given to two or three of them. The Court does not appear to



"REGISTRATION" (OR RECORDING ANGEL).

Caryatides at the offices of the Dental Board, Hallam Street.

MR. F. LESSORE, Sculptor.

"ST. APPOLONIA." "HYGEIA."

Caryatides at the offices of the Dental Board, Hallam Street.

MR. F. LESSORE, Sculptor.

have dealt specifically with the point, but it must be noticed that they proceeded to hear the case and decided it as against the Assessment Committee.

In Double's case the course suggested by counsel in the last case mentioned had been adopted, as notice had been given to six persons who were occupiers of the 327 houses which had not yet been brought into the new assessment, and no reference to inadequate notice was made in the case. Referring to the section it will be seen that this last case was an instance of an objector raising the contention of "the omission of a hereditament," and directly within the section. So far as can be seen from the above cases where an objection may raise the point that other hereditaments in other occupation are "unfairly or incorrectly" rated, notice must be given to any person directly affected, but when the objection may affect a very large class, then representatives of that class should be served with notice.

While we are treating with this subject of rating we may refer to the question of rent restriction and rating. We note that suggestions are being made by correspondents in the Press that in order to encourage building new houses should be exempted from rates for a period. This appears to us a dangerous doctrine for the whole foundation of rating is its equality both in assessment and incidence. Thus, in Double *v.* Southampton Assessment Committee the Lord Chief Justice said, "It is a principle of the law of rating that all properties of the same class must be valued by the same method of assessment, but not that properties of different classes must be treated by the same method. The licensed houses, however, are comparable things forming a class by themselves, and the respondent is aggrieved by reason of the fact that 127 of these houses were treated upon a different footing from the other 327 houses." It will be remembered that at one time the Courts considered that the Rent Act did affect the assessment of houses as a tenant could not be assumed to be willing to pay more rent than the law allowed. The House of Lords in Roberts *v.* Poplar Assessment Committee (1922, 2 A.C. 92; see *The Builder*, April 14 1922) disposed of this contention, but the legislature, in section 12, subsection (9) of the Rent Act, did make some discrimination for rating purposes in favour of houses which although left out of the Act as having been built after a particular date, were of a class to come within the Act. This cryptically expressed subsection has caused some difficulty, but we are strongly of opinion this principle should not be extended or we shall soon have classes favoured in respect of rates as we already have in respect of rent.

A FREEDOM OF SORTS.

FURTHER to the correspondence under this heading, Mr. C. Maxwell Aylwin has addressed the following letter to "Isis":—"Your very welcome letter has found me making holiday, and free to sit down, away from the hurly-burly, to think well before prolonging our interesting discussion. It is difficult to treat as closed questions which obviously still remain very open, so that I sincerely hope our Editor in his patience will still deem our differences of interest to more than ourselves.

"That you have met my personal appeal with so much generosity and broad-mindedness has resulted in our far better knowledge of and respect for each other—an admirable state of affairs which I much appreciate.

"I can understand, and even share, your reluctance to enunciate your 'Credo.' It implies a ruthless burning of boats at the outset of a perilous voyage. Dogma brings its own pitfalls, and yet without it a creed may well become like a loose cloak, fitting any figure of sufficient stature, but at the same time hiding its shape. So it needs a certain cut and fit about it before it can become a real revelation.

"Now I have been trying to imagine our two selves sitting at adjacent drawing boards to design, say, the façade of a block of modern offices. Perhaps you have executed many such works, and in any case I can quite believe that you could produce a far better result than could I. But what of the process? Would you experience the most excruciating mental torture amidst the fragments of broken principles, or would you take full advantage of the enormous loophole you have left yourself as when you say 'The Greek Orders . . . I would like them superseded from any doctrinal ascendancy, and construction finding its own free expression for service, aided, of course, by those precedents and examples which lift the mind to the full dignity of its own conception.' This net will not catch any fish, for they can all swim in and out at will, and we do want to catch a lot of fish even if we can afford to let the tiny ones through; perhaps we may be better without them. Let us narrow the mesh, or, in other words, let us have a little more dogma.

"After all, when we have done talking we have got to build, and this will be our most eloquent testimony for good or evil. I have always preferred to read Wren in stone to Ruskin on paper. I am even inclined to judge Sir John Burnet more eloquent than Professor Lethaby, and I think it a good plan to put every theory and principle to the test of practical exercise to see if it is a helpful inspiration. 'Construction finding its own free expression for service' is a truism upon which every faithful design must be based. Yet we must also to some extent agree upon a common language of expression before we can express anything at all, or, at any rate, so that others may understand. That is where your 'precedents and examples' enter the field. That is where my 'Greek orders' appear, though I fear you have taken me to be a disciple of the Neo-Grec, which is very far from the truth. It is only that I find a modern street front to be a frame of steel protected with stone. I judge a frame of steel to be composed of posts and lintels. I find posts and lintels must be comprehensibly expressed in the traditional terms of an order. I look upon the fully developed orders as springing from the pure Greek. That is as far as my Greek inclinations carry me.

"Now to turn to another matter. Imperfectly as I have expressed myself, you have read me as glorying in an economic struggle for existence of a very brutal type. I should like to try and make myself a little clearer upon this point.

"In the Army it was an old unwritten law to which we all paid homage, that if a man did not look out for himself nobody else would do it for him, and he, in fact, went under and stayed under until he learnt to fend for himself. It is a hard law and one which, to the civilian, at once conjures up the picture of your 'crabs in a pail.' Yet my personal experience of good-fellowship and real charity has been far richer as a soldier than before or since the great adventure. Military service was a great lesson of Life which has given us an advantage over our fathers, and (is it selfish to hope so?) over our sons as well. It taught us to revel in the struggle and to recognise in it nothing inhuman or essentially brutal. The reason is not far to seek. Personal efficiency is a law, but charity and good-fellowship know no law and therefore there is no essential reason for them to clash, often as they in fact do.

"Perhaps this removes the sting from the sound of 'a great army, willing and obedient, which can conquer the world.' Conquer or convert? Surely, the former is a more all-embracing expression, including the conversion you seek just as Kubelik in a conquest of his audience would convert them to his interpretation of music.

"Again, when you say that the atmosphere which no longer breathes fervour has bred 'all the restless fermenting of the suppressed forces that threaten society to-day,' I think you are raising a question of interlocking cause and effect. It is the old controversy of which came first, the egg or the chicken. Who can say? Most important of all, what is to be done? A vision of civilisation may be a great inspiration to Robinson Crusoe, but a real boat would be of more practical use.

"Now, will you grant me at least that my 'half-truths of economic struggle' may be at least as much to the point as your 'dream which relates life and which justifies it?' If I were called upon to diagnose the ills of present-day architecture I should pronounce her sound organically and constitutionally, suffering more from too many doctors than from a slight chill. Our philosophers, in their concern for the health of our art, run a great risk of inducing the very ills against which they would inoculate it. Let us not, of course, on the other hand, with the fatuous patter of a Coué, repeat a daily incantation of false confidence, for smug content is death itself.

"Perhaps my mild experiment in faith-healing will fail me in old age. I can only hope, Dr. Isis, that you will then be still in practice and that I shall not be in a state of chronic disrepair. Till then, my most cordial greetings to a very sincere and deep-thinking brother architect."

[This correspondence must now cease.—ED.]

Birmingham Archæological Society.

The annual meeting of the Birmingham Archæological Society was held on Wednesday last week. Mr. John Humphreys, F.S.A., President of the Society, read a paper on the excursions made during the past session.

All the officers of the Society were re-elected, and the following members were elected to form the Committee: Messrs. J. G. Barnett, F. T. S. Houghton, M. A. H. Miller, E. W. R. Newman, and B. Walker, A.R.I.B.A.

Lectures on Economics.

The following lectures are to be held at the London School of Economics, Houghton-street, W.C. 2, at 6.15 p.m., on the dates mentioned, under the auspices of the National Federation of Professional, Technical, Administrative and Supervisory Workers: November 24, Mr. G. D. H. Cole, on "The Real Working-Class and the Function of the Non-Manual Worker"; December 8, Major A. G. Church, on "Science in Relation to Workers' Control"; January 12, Professor Graham Wallas, on "The Psychology of Administration"; February 9, Mr. G. H. Stuart-Bunning, on "The Problem of the Professional Worker in Relation to Government Service." The fee for the course of four lectures is 1a

EXHIBITION NOTES.

THE ARCHITECTURAL ASSOCIATION DESIGN CLUB.

The first exhibition of work done by this club was held on Wednesday at its premises at 36, Bedford-square. Two subjects were set: the first, a design for a large town house on a forty foot frontage; and the second, a sketch design for a summer dining-room. The student was asked, in the first subject, to make a twelve-hour sketch design entirely on his own initiative, and afterwards, on setting about the finished drawings, he was given the benefit of advice by critics appointed in an honorary capacity to help him, in this instance Mr. H. S. Goodhart-Rendel, and Mr. V. O. Rees. The second subject was a twelve-hour study, uncriticised during its execution. Six designs were submitted in the first, and three in the second subject, all by students at work in offices during the day. The difference in merit between the two sets of drawings showed very clearly the the advantages of helpful criticism. In the larger subject marks were deducted if the preliminary study had been seriously modified or abandoned on account of criticism received during the execution of the finished drawings.

The exhibition showed great promise, and there is evidently a difficulty, when designing a large town house, in deciding whether the façade should have three, four, or five windows. Whereas, the best elevation showed only three windows, these were too small to allow the requisite glass area, and it would have been interesting to see such a façade treated boldly with three windows of sufficient size adequately to light the rooms. We refer to the underlying principles governing the Club at greater length in our leading article. The drawings were judged by the following practising architects, in addition to the two critics and to some members of the Association staff: Messrs. T. S. Tait, P. D. Hepworth, L. S. Sullivan, F. Billerey, and R. A. Duncan.

EXHIBITION OF PASTELS BY MINNA TAYLOR.

This is the sort of exhibition which may easily escape the notice that it deserves, yet holding within it that quality, not sufficiently valued, of quiet and yet intrinsic work. This collection of pastel portraits at galleries in Great Marlborough street has little of that appeal to passing phases and the theories that abound at this day, and will appear to such as old-fashioned if we regard the merit of a work of art to be in proportion to its identity with the theories of contemporary groups and schools. Yet it has the distinguished merit, which can never be disregarded, of character and appreciation of what is important in both subject and treatment of portraiture.

After all, as has been truly said, the artist is always painting himself. His appreciations and character are written all over his work; what he sees of beauty will depend on what he is himself, and this must govern the value ultimately to be found for his art. And in these portraits there is something more than the trained skill of draughtsmanship—which they also include—there is also the evidence of a nature, near enough to reality to know how much of it is hidden in appearance. So there is the quality of style in the work of Miss Taylor. She is, no doubt, fortunate in her subjects, for her sitters are mostly people of distinction and character, well realised in a portrait such as that of the "Principal of Manchester College, Oxford." Other of the more successful examples shown are Nos. 14, 17, 18 & 21. A "Portrait of Mrs. Ross" (23) is invested with charm and dignity.

Miss Taylor is also successful in the use of her medium, which she uses with knowledge of its own properties and limitations. The tendency to load pastel like oil paint is avoided, and its own particular characteristics are well displayed and the "bloom" of the vehicle is preserved. Used properly, it is not the case that pastel is a fugitive material, as is sometimes supposed. We have plenty of examples dating from the late eighteenth century in complete preservation. And a material which can last in its best state for more than a hundred years has passed the time that can suggest any danger for its continued permanence. Miss Taylor's understanding of form is large and fundamental, and finds emphasis in the important, giving the salient features of the type she is presenting. No. 14, "A Portrait of a Lady," the back of her head reflected in a mirror behind, is an original and successful composition, and one of her best examples, agreeable in colour and pictorial completion.

There should be a demand for portraiture of this sincere and traditional kind from those who desire a faithful and artistic record, and for the majority who cannot afford the expense of the "fashionables" in portraiture, Miss Taylor's work presents an opportunity of obtaining what they need. Mention should be made also of the pastel sketches shown, which are charming in colour and well observed.

EXHIBITION OF COMMERCIAL ART.

Those who care to look for improvement and to give a good account of their own time, have only to look in the direction of advertising—the art of the poster—to find reason for the faith that is in them. And, among the minor arts, that of the poster takes a prominent place, for its "Gallery" is the world. Its effect on the life of the nation is considerable, and the appreciations of the average life are well indicated in the character of advertisements. There is still much room—deep need for improvement. The larger the poster, the less satisfactory is its character, and we should like to see, if we are to continue the poster of great size, more of the qualities that are now so distinguishing a characteristic of the small-size advertisement—such, for instance, as those standing so much to the credit of the Underground Railway Co.

This Poster Exhibition, held through the courtesy of Messrs. Willing & Co., on their premises in Gray's Inn-road, shows the advantage of the closer union between business and art, that the methods and claims of both may be better appreciated. We welcome the genuine desire on either side to introduce a higher level in the artistry of the poster. On the whole, it would be fair to say that the posters produced at greatest expense are often found to be the least artistic, and that is to put it very gently. It is now beginning to be understood that the most effective results are to be obtained at a reduced cost, and that the problem of better artistic results is not dependent on the money spent on them. To print in one or two colours can be more effective than printing in ten. It is essential that the artist should be acquainted with the processes of reproduction for which he is making his drawing, and that he should know also their cost. These limitations are not a hindrance, but the means of a successful result, for it enables him to produce his work on practical lines. To make a design for a poster without this preliminary knowledge is to separate things which require to be united, and leaves his work up in the air.

Improvement in the artistry, both colour and design, as it becomes more general, will mean a great amelioration of the hoarding, because one of the difficulties lies in the often unhappy juxtaposition of one poster with another. The advertiser is not able to select where his poster shall be placed on any hoarding, and has to take his chance, with the result that a good poster is often injured by being placed next door to a bad one. With the raising of the general level of poster art, this would not be the case. We do not say that this will prevent its better qualities being recognised, but it will be greatly to the advantage of public advertising when a closer unity exists between each and when the average of the whole is raised. At present very bad and really good posters are all tumbled together, and the advertiser should recognise what is owing to this better outlook. When traditions of better work are more established, which is becoming the case, we shall see the gradual extinction of the more vulgar and blatant street advertising, because it will not sell the goods. Enormous exaggerations of scale, such as the very ugly head which advertises a cigarette at the present time, the aim to put up a barrage on the public by such ugly and strident self-assertion, is in the way of defeating its own object, for it is becoming realised that the restraints of good taste and regard for public amenities are a better advertisement.

Coming to the posters shown at this exhibition, we noticed as of special accomplishment and interest those by Charles Pears and Wolmark. The dramatic character of the latter and the refined and skilful drawing in the former, mark them out for notice. A small poster, "The Strong Road to the West" and other examples, by L. Cusden, are very competent and pleasant in treatment. Others by G. M. Higgins, S. Isaacs, and F. Lingstrom should be noticed. The lady artists at this exhibition give a good account of themselves, and their work is of considerable merit and attainment. A prominent place, in any praise bestowed, must be given to Miss Nancy Smith for her posters, and to Miss Hilda Cowham. Many other examples of merit space precludes our noticing, but that there is an aim, and a treatment, now animating the designer of posters, which is original, artistic and sincere, promises much for the future of the art; that this is reciprocated by commerce is evidenced in the courtesy of Messrs. Willing in lending their premises for the exhibition.

It should be remembered that the poster in its nature is of more or less ephemeral character; over-elaboration of pictorial effect is, therefore, seldom desirable. Completion, even, is less important than effect; simplicity and directness is more to be desired than over-elaboration. Much money is wasted in advertising through want of this artistic appreciation. Art, when properly understood, is not nearly so expensive as vulgarity and false display.

The artist has also to remember the special object of his design, which is to advertise a particular article, and though there are many ways of doing this he must have this constantly in mind. In being artistic he must also be practical, lest his drawing distract attention from the thing to be advertised, instead of directing attention to it.

NOTTINGHAM AND DERBY ARCHITECTURAL SOCIETY.

There was a large gathering of members of the Nottingham and Derby Architectural Society and friends at the Society's Room on Tuesday evening, October 17, presided over by Mr. Arthur Eaton (President).

Mr. Tom Jones (Member of the Nottingham Society of Artists) read a paper on "Technical Hints on Water Colour," in the course of which he said that as an artist he would like to see the artistic curve more often introduced into a building, although he recognised it was the question of increased cost to the client which often deterred the architect from adopting it. He thought there was too much of the straight line about many buildings which might with advantage be broken up and the building and details so arranged to obtain this suggestive curve.

After explaining the colours he preferred and the methods he used, the lecturer demonstrated in a practical manner the manipulation of water colours and tones, and in a humorous description gave his audience a store of useful hints on the technical side of the subject.

He concluded by showing a water-colour sketch of the Mapperley war memorial, and explained how he had endeavoured to realise the meaning and interpret the symbolism of Mr. Gleave's design and lay-out.

A hearty vote of thanks was accorded Mr. Jones at the conclusion of the paper.

TOWN-PLANNING CONFERENCE AT MANCHESTER.

WE give below reports of papers and discussions at the Town-Planning Conference held in Manchester on October 12 and 13. The papers read on October 9, 10, and 11 were given in our last issue, as also was a review of the Town-Planning Exhibition held in conjunction with the Conference.

TOWN-PLANNING AND SOCIOLOGY.

At the evening session on Wednesday COUNCILLOR W. B. SCOTT (Mayor of Middleton) occupied the chair.

"The Sociological Aspect of Town-Planning" was the title of a paper read by MR. EWART G. CULPIN, in the course of which he said in the consideration of any rational system of town-planning the first factor to be borne in mind was the sociological factor, that human aspect which lifted town-planning out of the realm merely of art and science and constituted it a living, palpitating study of the proper mode of life and the fittest manner in which to give expression to the legitimate aspirations of humanity. One of the most potently determining factors of human existence was the environment in which the human animal passed its time. Slum conditions would make slum dwellers, and criminal associations would create criminals. It was only the exceptions where man was superior to his environment. If that be true, it was easily demonstrable that town-planning could have in it the most potent germs for human betterment, and just as the evil, haphazard conditions of past generations had resulted in a terrible legacy of ill-health and crime, so the making of sanitary towns, spacious thoroughfares, hygienic homes, beautiful surroundings, and parks and open spaces of real recreative value, would result in a better standard of inhabitant, and tend, if only gradually, to the ennoblement of the race. The unit of the city was the citizen, and in considering the development of the city anything which ignored the well-being of the citizen was misplaced energy. Life for its maintenance depended upon sunlight, air, food, clothing, shelter, and all these, with the possible exception of clothing, were influenced by the method in which the town was planned, and the town-planning of new areas could vitally affect each one of them.

To his mind, before either the architect or the engineer came on the scene, and dominating them throughout all their activities, must be the sociologist. The city as a place to live in, as a place to work in, as a place to play in and to worship in must be more before the minds of its creators than either the city beautiful upon plan or the city with its perfect engineering acquirements, although the two latter phases must be present to complete the first.

The needs of society collectively and in the individual determined every aspect of town-planning, and in the planning of towns of the future they must first take heed of the human problem. The town must be made healthy, comfortable, and convenient, so that the hours of work and leisure may be made of the greatest possible benefit. The history and the tradition of the town would be taken into consideration, for they would realise that the city had a soul, and unless they were content to create a mere mechanism of roads, houses, shops, and factories they would be careful to ensure that not only were the bones of the city clothed with flesh but that there was an incentive to the growth of a proper civic spirit and a real civic consciousness which marked to-day the difference of an old-world town and the newer London suburbs.

No addition to an existing town should be planned without there first being made an industrial and social census and survey. They must know the kind of trades that had been carried on and were likely to be carried on, and the sort of accommodation each trade required. They must be careful that the factory area was in right relationship to the residential quarter, and that the means of access between the two were ample. School sites must be carefully located, and public buildings must be not only where they were seen and give a fitting expression to the dignity of the town, but where they would be of the greatest public service. Perhaps more important than the big park was the playing ground, and the allocation of areas, not necessarily large, for children's playgrounds would be one of the most paying investments for any town. A traffic census would be necessary for road maps, and the grading of the widths of streets and footpaths would receive increasing attention. They must know reasonably where offices and warehouses would be, for the footpath which would serve the warehouse district was useless in an office locality, where the roads would be inadequate for warehouses.

Since the industrial evolution converted the rural population into an urban one, with the resulting urbanisation of the great bulk of the population, it became more and more important that the urban well-being of the people should be properly studied. Many local authorities seemed to be of opinion that rigorous by-laws would cover a multitude of municipal sins, and that a slight housing scheme here and there was an effective substitute for town-planning. One great difficulty, indeed, was the definition of what was meant by town-planning. The construction of main arterial roads and provision for a town's growth in the main services were thought to be enough in some instances, while others were not satisfied until their scheme covered practically every factor of human life, or, in short, opening the way to a newer, cleaner, saner method of life, brought into being without any upheaval of existing systems but merely by the application of common sense to the affairs of municipal life and government. The question of definition was not aided by present law and practice. At the present time they were only planning town extensions, fixing traffic routes, determining the use of land, regulating growth, and great as was that advance they had to contemplate something much bigger. In order effectively to house the population and bring some joy of life to the present slum dwellers they must sooner or later contemplate town-replanning, and be given powers more easily to cut away the festering wens of city life and open up the congested areas. They must be thinking of complete town-planning, the building of complete new towns in spots where they ought to be, and they must have country and district planning if their work was to be truly effective. The growing rural areas of to-day were really the places where planning would be most effective, because it would prevent the indiscriminate urbanisation of still unspoiled countryside, and the time was rapidly approaching when natural forces would compel them to a consideration of the query as to whether a limit must not be placed on the growth of towns; whether, in fact, after a certain point has been passed, the continued growth of any town is not a menace to its own health and security. The cry of "big city" for the sake of "big city," as of "art for art's sake," did not ring true to human experience: a big city must only be allowed when it was proved that it was going to secure a happier and healthier existence for its humblest citizens than was possible in a smaller city.

He knew the arguments for the big city from many points of view, and could appreciate them: how municipal administration was better and cheaper and services more effective; how the town must extend its borders so that the burden of rates might be borne by all who benefited from them; how some institutions and services could only be efficiently supported and carried on by the bigger population; and how the city's trade and commerce would be affected by limitation. But there was a prior claim to all that, and even those things could be at least as effectively secured by scientific social planning, although a limit were placed upon expansion. In a properly pre-planned area belts of park land and cultivated land which separated each unit could be so crossed by proper means of transport that each unit would be in close touch with each other and with a common centre—in closer touch, in fact, than some neighbouring districts of large towns were to-day. But there were other reasons why they should consider whether a limit should not be placed on the growth of brick and mortar. Was it well that town should be grown into town and absorb town and village, with the resulting urbanisation seen in parts of Lancashire? By driving the open country farther from the dwellers in the centre, were they not depriving them of something very precious, even if it be not properly appreciated by the victims themselves? Was there not a national aspect of the question as well as a local one? None of them was satisfied with the present housing position, but a large number of houses had been built and very many more must be built. But where? They had all been putting forward their own schemes and seeking permission to build tens or hundreds or thousands of houses in their own locality. Could they not conceive a model state in which there was a real country and regional planning authority which should look at that suggestion from a bigger viewpoint? That authority would examine the housing needs for the whole area, but would also consider the necessities of trade and commerce and agriculture. It would consider the agglomeration of population and also the bare tracts of land suitable for development, and it would decide whether Manchester or Bolton or Rochdale was really the best place to increase, or whether national good would not be better served by grouping together some of the new industries required with some of the new houses required, and creating afresh upon virgin soil, with none of the evil heritages of the past, a model community, properly planned and properly equipped for the rearing of a race of virile men and women fitter for the realisation of the destinies of the race.

Divorced from the sociological basis town-planning might create evils which would need as much combating as did those whose place they had taken. Magnificent wide streets with imposing buildings were no compensation for the rabbit warren of two-room tenements at the back.

The present ill-named passion for economy was likely to defer town-planning proposals in areas where a short-sighted policy prevailed. It was the long view that was required, and there was no civic improvement which could be obtained at so little cost.

[The paper by Mr. J. G. Gibbon, read on Thursday morning, is dealt with on p. 631.]

TOWN-PLANNING NECESSARY FOR INDUSTRIAL EFFICIENCY.

Under the chairmanship of Alderman F. Houghton (Mayor of Oldham), the afternoon session on Thursday was devoted to a paper by Mr. Thomas Adams on the industrial aspect of town-planning, in the course of which he said the first problem that confronted the town-planner was how to improve the facilities of the town for carrying on its industries and what were the social, economic, and physical improvements needed to make those industries more efficient. An economic and industrial survey should be an essential preliminary to the preparation of the plan of a town. The relation between its constituent parts and functions should be studied and the order of their importance ascertained. Hence a town-plan should relate to all forms of growth within and surrounding a town and to the whole of its area, whether built upon or not. In that sense they had hardly begun to plan towns in this country. In making and advising regarding surveys of that kind on both sides of the Atlantic, he had found it of importance to ascertain the views of manufacturers and business men. In England the manufactuer had looked with indifference, if not with suspicion, on town-planning—whether because of the limited scope of town-planning operations or because of a lack of appreciation of its advantages he could not say. At any rate, he found that manufacturers themselves organised the making of a survey into their industries in the States, but here they were prone to question its value and to look somewhat askance at any questions addressed to them, although when the matter was explained they showed a willingness to assist.

One great difficulty in making an industrial and economic survey, as distinguished from what was known as a physical survey, was that of limiting the investigation to essentials for purposes of a plan. Some indication of the scope of an investigation might be given by summarising a few points that influenced a manufacturer in selecting a factory site, according to the opinion of manufacturers who had been approached in towns in England, Canada, and the United States. Those were:—

1. Comparatively level sites with good access by road where works could be economically built and good facilities for distribution could be obtained.

2. Low-priced land, so that sufficient could be acquired at reasonable cost to permit of the best arrangement of buildings and room for future expansion.

3. Access to railways for certain industries with room and gradients suitable for the most efficient and economical arrangement of sidings; or access to good arterial highways for light industries, dependent on motor haulage for ingoing and outgoing traffic.

4. Availability of tracts of land of varied character to suit different classes of industry.

5. Proximity to gas and electrical works so as to save distribution costs.

6. Facilities to reduce cost of handling and cartage to the utmost extent practicable.

7. Co-operative action by local authorities under expert advice in providing suitable sites and facilities for industries—including the development of modern methods of transportation by water, rail and road, and the necessary terminal arrangements.

8. Proximity or easy access to dwellings, so as to save waste of time and money in travelling of workers to and from works.

9. Supply of skilled labour.

10. Suitable atmospheric conditions.

In one form or another, and in varying degree, those matters had a connection with the plan of a town. The present slapdash methods of urban growth hampered manufacturers in many directions in trying to obtain the facilities needed to carry on industry efficiently. Much of the fault lay in not having the towns planned as great industrial plants, on which full consideration was given to the needs of industrial development outside as well as within the doors of the factory.

The process of decentralisation of industry involving the dispersal of certain classes of manufacturing plants from urban into comparatively rural districts, or from large crowded centres into smaller towns, which was taking place in some regions, was partly the result of the absence of town-planning in the existing centres. It was where that process was going on that it was practicable to create garden cities. Where it occurred without planning the new industrial areas thus being created the movement would be of no lasting benefit to the industries, and the evils that had given rise to it would be repeated in the new areas. In planning a modern town, among the problems to be investigated were the causes of any migratory tendency where it existed and the methods that could be employed to arrest unnecessary movement in future, and to plan properly such new industrial areas as were created.

The Manchester region was the most extensive manufacturing region in the world. While it comprised a series of separate towns with Manchester as the centre, it was really one great metropolitan region, in which no part or separate corporate area was without relationship to, and dependent on, the others. In the sense that new methods of manufacturing organisation, new ideals of human comfort, and new forms of transportation had come into being in recent years, Manchester to-day was faced with new problems of town-planning that made the present the appropriate time to plan. The region was one with characteristics of its own. It must develop its own town-planning methods. In a special degree town-planning in the Manchester region must have regard to the special characteristics of its past growth and future tendencies of industrial development and to improving existing towns. Town-planning had, of course, no connection with efficiency within the factory in any kind of industry. Manchester, as the capital of a region that took the first place in the production of textiles, engineering, machinery, paper and glass, should take the first place in inaugurating a sane method of town-planning—that would have regard to all factors in civic growth—to the peculiar characteristics of the region, and particularly to those that related to industrial needs and problems.

Discussion.

Mr. A. Hopkinson said it seemed to him that town-planning was merely the stereotyping of requirements. One of the great errors of modern town-planning was due to the assumption that the population would increase. He thought that everything tended to show that the reverse would probably be the case. Referring to the Government housing schemes, he said a visit to the houses erected in the Manchester area made him feel that the "abomination of desolation" referred to in the Old Testament had been realised.

Mr. E. Worrall (Surveyor to the Stretford U.D.C.) said he hoped Parliament would take the necessary steps to remedy the anomaly of the exclusion of built-up areas from town-planning.

Mr. H. V. Lanchester said he would like to point out that a town-planner was one who did *not* stereotype, but who preserved an open mind and used imagination. Town-planning, at its best, was an economic problem, and the town-planner's duty was to say what things could be done and what schemes would eventually pay for themselves.

Capt. Reiss (Chairman, Garden Cities and Town-Planning Association) said it was a mistake to imagine that town-planning would tell individual manufacturers where or how they should build their works or factories. The speaker gave an illustration of the advantage of "zoning" by a reference to the transport difficulties due to the traffic from the Port of London docks to the factories in East London. One of the first town-planners, Sir C. Wren, had prepared a fine plan for London, and the fact that this had not been carried out had cost ratepayers an enormous amount of money in later times.

Mr. Hopkinson, in proposing the vote of thanks, said that his remarks had been intended seriously, and were the expression of his own opinion on the subject; his object had been to put some home truths before the Conference. He thought some good had resulted from the housing fiasco, as it had made at least 5 per cent. of the population desire better housing conditions, and he hoped that one result of this Conference would be to make people dissatisfied with towns as they were.

Mr. Adams, in reply, said the plan for the city of Edinburgh was the result of a competition held nearly a century ago. He agreed that the housing policy was open to question, both as to its methods and results. On the other hand, town-planning did not necessarily mean the employment of an expert, but dealt with problems outside the control of individual manufacturers. Town-planning might mean extravagance, but with efficient town-planning money could be saved. Slum areas were a big question, and he thought the saying that "the wars of Europe are bred in the slums of Europe" was one which they should remember. The planning of towns was not so much a question of spending money as a matter of foresight—using wisely what we should have to spend in any case. He was convinced, no matter what might be said to the contrary, that town-planning was an art and a science.

[The reception on Thursday evening and the proceedings on Friday and Saturday were under the auspices of the Town-Planning Institute.]

IMAGINATION IN TOWN-PLANNING.

On Friday morning the chair was occupied by Alderman C. Sanderson (Mayor of Bury).

In a paper on "Imagination in Town-Planning," Professor S. D. Adshead said it was his view that the best results in town-planning would always follow from a well-organised combination of effort—combinations of authorities, combinations of professional advisers, and combinations of interests of all kinds—each in its relative sphere.

He thought there was a tendency in most modern undertakings to over-concentration on the intricacies of detail to the neglect of broad simple issues. At the outset of their undertakings they must use the innate imagination of simple, ordinary men. They must not be architects thinking merely of architectural façades; they must not be engineers thinking in watertight compartments of transport and sewage schemes and roads; they must not be landscape artists thinking everything depended upon vistral treatments, natural gradients, or the preservation of beautiful belts of trees; nor must they be economists, sociologists, valuers, or surveyors, confining attention entirely to efficiency and cost. Town-planners must in the first place be ordinary men, and not so well educated as to have lost all imagination and the originality of children. Specialised attain-

ment must at the outset be laid on one side. He submitted that the decoration and ornamentation of the city was of a very superficial kind if it was not a finish to things that were real and essential, and it followed that the finest achievements in that direction must emanate from beginnings founded on the finest aspirations and the widest interests of human beings. There could not be great cities that were designed purely to meet utilitarian needs. The industrial towns could never compare in that respect with the great unspecialised cities of the past, but in that regard there was comfort in remembering that a modern industrial town was, as a rule, only a unit in a conurbation of towns—a conurbation which, taken as a whole, met every requirement in human endeavour.

Was it right, as had been done in the past, to build and to encourage the building of industrial towns as industrial towns only, and with merely such beautifications as an occasional fountain, the statue of a benefactor, or the sight of a few unhealthy trees struggling on some soot-begrimed patch? No; the development of the industrial town must not be exactly on those lines. The industrial town was in the first place a kitchen, but the operatives who worked in it required a sitting-room and a night out. It had come to be almost an accepted principle in housing that the complete working-man's house must have a parlour; and in town-planning it had come to be a working principle that the best position for a working-man's residential area was not on the top of his job but in open surroundings, and, where possible, outside the industrial area of his town. There was always a wonderful similarity between the needs of the individual and those of the community. The life of a human being could not be lived in full measure in Salford, and therefore Salford should be reconstructed whenever opportunity occurred, and Manchester should not be allowed to develop without that development incorporating all those fine features necessary fully to develop citizenship.

Could that be done by allowing building operations to proceed without first settling big problems of social development? He did not think so. Why did not sociologists help town-planners by formulating well-founded principles for the distribution of the populations of towns?

The great problem was the problem of distribution. Were they to develop towns on the lines of a great separation of classes; was there always to be an east end and a west end? Were they, as some would advocate, to stop developing big towns altogether? Were they to surround them with suburbs that were appendages rather than enlargements, and small towns that were self-dependent, or each of which specialised in one great regional effort?

In his view, the principles that had operated in the selection of sites for groups of working-class houses in larger cities had been wrong. The sites had been too few, and the number of houses in each too many. That was not a mistake of the town-planner and housing architect; it was one of those mistakes which he would like to describe as "nobody's fault." It was really due to the absence of any convictions as to how in the best interest of the individual communities should be encouraged to develop.

Liverpool had set aside three areas, each designed to provide sites for 2,000 practically similar houses, intended to be occupied by 10,000 practically similar people. Now, how could 10,000 people, living in practically the same type of house, more or less the same type of street, and occupied in practically the same daily routine, expect to enjoy all that interest and variety of surrounding which a normal environment could offer. He thought no class that was entirely separated from other classes (as must necessarily be the tenants in these huge schemes) should in the best interests of citizenship exceed in population that number which could at any rate have a nodding acquaintance with one another; otherwise there was bound to be that monotony which characterised so much town development during the nineteenth century.

When the Ministry of Health first took up housing it urgently advocated variety. He doubted very much if the importance of making the housing areas of the people interesting places to live in seriously concerned the higher officials of the Ministry to-day. He hoped that any future policy emanating either from the Ministry or from local authorities for providing houses for the people would carry with it the necessity for their being part of an interesting communal scheme.

He thought not more than, say, 500 houses of one class and accommodation should be placed in juxtaposition. In controlling the development of areas as working-class suburbs or satellite towns more sites should be left vacant for public buildings and other kinds of accommodation such as in the future new conditions might require. There should be more open spaces, not only for recreation but to give a more generous appearance to the whole organisation of the scheme. Only with such a development could they really talk about ornamentation and decoration. If in such a lay-out there were a river or an existing avenue of old trees they could talk about a promenade, and they could talk about seats and kiosks for a local band. If there were properly-prepared sites for public buildings they could come to consider forecourts, stepped approaches, banks, and balustrades. If there were ample width of grass border they could talk about planting trees.

Decoration and lay-out went hand in hand. It might be argued that the equipment of the housing area with all those amenities meant great expense, but that was a short-sighted view and in reality it was not so. Open spaces need not be what was called "laid out." It only meant the bare cost of the land.

Just as in its decoration and finish the suburb of widely-disposed houses would have a rural appearance, and demand for the proper expression of its character a rural finish, so the more closed-up area which was nearer town must have all the finish of a well-kept park. A simple design for a lamp-standard suitable for erection in a rural or semi-rural suburb was very much needed. It ought not to be much more than an oak or a concrete post.

Open spaces were over and over again ruined by the introduction of some type of "defence" or "offence" altogether too elaborate for such positions. A cheap spiked railing, the common spear-point example so frequently seen in the suburbs to-day, suggested all the horrors of barbed wire. Spiked railings round shrubberies and flower beds were an insult to a community, and he thought it was better to get the shrubs broken and flowers stolen than to protect them in that way. Wrought-iron railings, too, surrounded public lavatories to the disfigurement of towns. Open spaces should be kept open, and cab shelters, tool houses, fire-brigade ladders, ambulance stores, and all such impedimenta cleared out. The right way to design a public lavatory entrance was not to advertise it but to hide it, and that was best done by surrounding it with a low, solid stone or granite wall.

It would add an interest to many housing schemes if provision were made for the erection of more public seats. A seat always looked interesting, even though it was not always comfortable.

Tree planting, when done properly, was one of the most accomplished of the arts. To line a street with trees was to endow it with a very special character. They all appreciated the street that was aligned with a well-developed avenue of trees, but the street not tree-lined could also have a charm of its own. Groups of well-designed houses set back behind well-kept gardens in the street that was not tree-lined could produce an effect that was in every way quite as charming as that of the avenue. The decorator of the suburb had yet to appreciate the value of planting trees in groups—single trees at street crossings and trees at the backs of and between the houses filling up those gaps which the completion of a scheme nearly always revealed.

The principles that he considered should guide them in providing features that would decorate and ornament a town were:—

(1) That they should express and emphasise the peculiar character of the district which they adorned.

(2) That they should stand for human endeavour at its best; and

(3) That they remind one of states of existence not met with in everyday life.

As an architect and town-planner he had ardent reverence for the great things of the past. In the intellectual development of the city the first thing to be considered was the preservation of those works of their ancestors which they found themselves so incapable of repeating. They might be able to do other things better, and the charm of an old work might be of a sort not consonant with modern times, but time did not alter standards of perfection, and standards of perfection demanded standards of attainment which no sane man could afford to ignore. That the town which contained ancient monuments, historic associations, and which inherited fine traditions possessed advantages over the newer and more modern example could not be denied; but at the same time a newer town could at any rate be so laid out as to express in a modern way all the varying interests of its inhabitants, the point being to provide the interests. Had town-planning during the nineteenth century woven into its texture all the interests of the people instead of entirely confining attention to purely physical needs there would have been better towns to live in to-day. Such ancient features as village greens, town gardens, market squares, promenades, riverside walks, etc., were never considered a necessary part of the human environment in the building of the nineteenth-century town.

The public wanted things about them that reminded them of their great connections with the past, things that invited them to contemplate other states of existence than the sordid ones usually associated with industrial life. How could they have such thoughts in the back streets of Manchester or Whitechapel, or even amongst the standardised terraces that throttled every large industrial town? They could not have them in such places without a vast conflagration and a vast policy of pulling down. All they could do in such cases was to take full advantage of every opportunity offered for reconstruction.

Discussion.

DR. P. WORTHINGTON said the lecturer's plea for decoration and variety in towns was all-important, as was the remark that when all available data had been collected imagination should be brought to bear on the development plan. He rather wondered what Professor Adshead would make of such a district as Trafford Park.

The LORD MAYOR OF MANCHESTER took the opportunity of welcoming the members of the Town-Planning Institute to the city, and said he had been astonished at the success and public appreciation of the exhibition and of this Conference, and added that arrangements had been made for organised visits of school children to the exhibition.

PROFESSOR DICKIE (School of Architecture, University of Manchester) said he thought the paper showed that schemes should not be damped down because of difficulties. He suggested that a number of derelict houses in the city might be acquired and the sites used for open spaces, at any rate temporarily. Referring to the remarks in the paper on the subject of railings, he said he thought a simple

wire to mark the boundary would generally be sufficient to prevent trespass. For roads under 150 ft. wide he thought shrubs in clumps were better than trees. The Town-Planning Acts should be amended so as to include built-up areas.

COUNCILLOR WORTHINGTON (Ashton-upon-Mersey) referred to the way in which their housing schemes were "improving country lanes by rounding off the ugly corners," etc. He agreed with the plea for the abolition of unsightly railings, and felt that private owners should play their part in the education of the public, though in the Manchester district there was a strong desire for privacy.

A lady speaker made a plea for the provision of small open spaces wherever possible "where a mother can nurse her child." She thought more attention should be given to the planning of "kindergartens" in the real sense of this word.

MRS. E. D. SIMON (Lady Mayoress of Manchester) said she would like some further explanation with regard to the 500 house unit referred to in the paper. If this was suggested as the size of the community she thought it would be found too small for social life and intercourse. She thought, with regard to ancient monuments, etc., that there was sometimes a danger of over-estimating their importance in the consideration of the new town plan.

PROFESSOR ADSHEAD, in his reply, said (with regard to the 500 houses) he had not meant to suggest any hard-and-fast unit, but to indicate about the number of houses of the same type which should be put up. With regard to the standardised terrace he would like some individuality in such standardised units.

THE MANCHESTER AND DISTRICT JOINT TOWN-PLANNING ADVISORY COMMITTEE.

At the last meeting of the conference (Friday afternoon), under the chairmanship of COUNCILLOR T. W. A. FORREST (Mayor of Darwen), a paper on the work of the Manchester and District Joint Town-Planning Committee was read by ALDERMAN THOS. TURNBULL (Chairman of the Committee).

SIR TUDOR WALTERS, M.P., in the course of some remarks before the paper was read, said the Government was fully alive to the importance of town-planning, and he had been impressed by the sagacity of Manchester in promoting this exhibition and conference. He thought town-planning was really a reversion to the methods of our ancestors, which were now being re-discovered and adapted to modern requirements. The Manchester and District Joint Committee was doing excellent work. He did not think effective town-planning was possible without co-operation.

The CHAIRMAN said he thought there should be co-operation not only between local authorities, but between these authorities and the Government, especially on the subject of the roads.

ALDERMAN TURNBULL, after outlining the inception of the Committee, gave the following summary of the work accomplished to date: Over 100,000 acres of the area of the Joint Committee was now definitely under the Town-Planning Acts, schemes being in preparation for this acreage by about thirty local authorities.

A small Sub-Committee of the Joint Committee had interviewed representatives of fifteen local authorities in the area with a view to securing the promotion of town-planning schemes, and thirty other authorities were to be interviewed this year.

The Building Development Sub-Committee had issued a first interim report on building development pending the preparation of schemes, and made recommendations as to the definition of buildings, maximum average number of houses per acre and maximum number on any one acre for urban and rural areas, the proportions of the site area of a house to be built upon, regulations as to houses built in blocks and secondary means of access to such houses, height of houses, space between buildings fronting streets; it had also issued special reports on public open spaces and recreation grounds, and zoning. The Sub-Committee had also considered the draft town-planning model clauses of the Ministry of Health with regard to buildings, and suggested certain amendments thereto.

Under the direction of the Roads Sub-Committee a 6-in. scale map of the whole area had been prepared, showing the widths, at about quarter-mile distances, of all first- and second-class roads in the area and the positions of all road gradients of 1 to 20 or less. The Sub-Committee had also made recommendations as to the desirable minimum widths of first- and second-class roads and as to the building set-back theron, as follows: 100 ft. width for all new roads, first class; 75 ft. width for all new roads, second class; widening to 100 ft. for all existing roads, first class; widening to 75 ft. for all existing roads, second class. Building set-back of 20 ft. on either side of all new first- and second-class roads, subject to a relaxation in the case of all buildings other than dwelling-houses, which might be brought forward not more than one-half of the 20 ft. building set-back. A considerable number of the local authorities represented on the Joint Committee had agreed to give effect to the recommendations of the Roads Sub-Committee.

The Civic and Regional Survey Sub-Committee had had under consideration the preparation of a comprehensive civic and regional survey. On the instructions of the Sub-Committee a census of traffic was taken on all first-class roads in the area, over a daylight period of twelve hours, on June 22 last. The count points numbered 544, and from the data obtained by the taking of the census a traffic map was prepared.

The Roads Contribution Sub-Committee had had under consideration the question of the proportion of the cost of constructing main roads to be borne by the State, the county, and the various local authorities through whose area any particular road might pass, but pending the completion of certain information the Sub-Committee had not been able to submit any definite recommendations.

The future of the Joint Committee had caused considerable thought, and he was of opinion that it could be of greater usefulness and should be allowed to increase its sphere of action. The time was fast approaching when a large number of schemes would have to be promoted in compliance with the requirements of the Town-Planning Act of 1919, and it seemed necessary that the Joint Committee should pass from the stage of merely being an advisory body, and should, with any necessary safeguards or qualifications, have permission from the constituent authorities to proceed without delay in the preparation of a regional plan and preliminary statement as to development for town-planning the whole area. Such action by the Joint Committee would result in saving of both cost and labour to the 100 local authorities existing in the area, and would be immeasurably better than each of the 100 authorities preparing separate town-planning schemes and the Joint Committee endeavouring to co-ordinate the varying proposals. The duty of the Joint Committee would, he suggested, be to prepare a regional plan, the work of filling in the detailed planning being under the direction of the various local authorities as development in their respective districts took place. It was not the desire of the Committee to interfere with the duty of the various local authorities in connection with the general details of their own schemes. What they were out for was for all the Council representatives on the Committee to look at the area as a whole, and deal with what concerned or affected the whole area as one work. The industrial north could not be divorced from the agricultural south of the area, each portion being to a very great extent interdependent, and he believed that to secure effective planning and control the area of the Joint Committee ought to be treated as a unit, and the fullest co-operation given in the work of planning for the preservation of health and industrial prosperity.

It should be clearly understood in dealing with the suggestion that if the Joint Committee prepare a regional plan any such plan and necessary preliminary statement would have to be placed before each constituent local authority for consideration, and that all or any of such authorities would be fully entitled to approve or disapprove of the plan and statement as affecting their areas or area. The preparation of a regional plan by the Joint Committee would relieve the constituent authorities of preparing individual schemes, secure the preparation, either directly or indirectly, of schemes for areas which might not be town-planned for some considerable time, prevent waste of effort in certain directions, and lead to economy in cost; and, further, the Joint Committee would be in the very advantageous position of securing the very best advice on the various aspects of the problems attached to efficient town-planning.

The administrative work of the Joint Committee since its inception had been conducted by Mr. Heath, the Town Clerk of Manchester, as Honorary Secretary, in a most excellent and thorough manner, but the administrative work was rapidly increasing, and should the Joint Committee proceed with a regional plan it would become necessary temporarily to engage a small staff, mainly experts, to cope with the work. In lieu of the present basis of contribution to the expenses of the Joint Committee, a contribution by the constituent authorities of a sum equal to the produce of an eighth of a penny rate per annum for a period of two years would be sufficient to enable the Committee properly to function in the larger sphere suggested.

Discussion.

COUNCILLOR SHAWCROSS (Rochdale) said, with regard to the representation on the Joint Committee, he would like to suggest that this should be composed of two members from each county borough, one member from each of the other authorities, and that the surveyors and engineers should have the right to attend and vote, except on questions which involved the expenditure of public money. Dealing with the zoning problem, he referred to exceptional difficulties due to the industrial area being in hilly districts, where transport problems were complicated by the nature of the country, and explained how this had come about. In the question of zoning he thought a more unbiassed view would be taken by the Joint Committee than would be possible if the matter was dealt with by local committees, who would be influenced by conflicting local interests.

MR. ABBOTT (clerk to the Ruislip-Northwood U.D.C.), referred to difficulties experienced in the Northwood town-planning scheme, which was the first to be undertaken under the Act, and to the amendments which they had found it necessary to make in their zoning proposals some years later.

MR. REAY-NADIN (Town Clerk, Sutton Coldfield) proposed that a resolution should be

passed and forwarded to the Ministry of Health recommending the amendment of the 1919 Act so as to extend the provisions of the Act to built-up areas.

MR. H. V. LANCHESTER (President, Town-Planning Institute), in seconding the resolution, said he considered it would be better that two separate resolutions on similar lines should be moved by the Town-Planning Institute and this conference. This was agreed to.

After further discussion the resolution was withdrawn, and it was agreed that representation on these lines would subsequently be made to the Ministry.

MR. J. C. GIBBON, C.B.E. (Assistant Secretary, Ministry of Health), said the exhibition was by far the best of any which had yet been held. He thought the success of town-planning depended on the work being done on broad and comprehensive lines.

THE LORD MAYOR OF MANCHESTER said he hoped the work of the Joint Committee would be continued on the lines which had been indicated. He hoped the suggestion which had been made for ½d. rate to cover expenses would go through.

ZONING.

On Thursday morning, under the chairmanship of COUNCILLOR GEORGE THOMPSON (Mayor of Eccles), Mr. I. G. GIBBON (Assistant Secretary, Ministry of Health) read a paper on "Zoning."

In the course of the discussion on this paper, MR. ORR said zoning would always provide for changes, but that such changes could only be allowed at the will of the majority of the citizens. He understood that in the United States the character of a "block" could not be altered except with the consent of 20 per cent. of the owners.

COUNCILLOR HUGHES (Eccles) said he thought a good case had been made out by Mr. Gibbon for the nationalisation of the land. He thought the removal of slums should precede town-planning.

COUNCILLOR SHAWCROSS referred to the zoning map prepared by the town of Rochdale.

Replying to the discussion, MR. GIBBON said he would like to make it clear that planning was not primarily a matter for Whitehall. With regard to the inference that he had made out a good case for land nationalisation, he advised Councillor Hughes to look at the definition of town-planning in the Acts. He thought enormous savings could be made by the application of town-planning to built-up areas, and considered this extension of the Act would be found to be essential.

Dinner at the Grand Hotel.

During the week the Town-Planning Institute entertained to dinner at the Grand Hotel the Chairman and some of the members of the Manchester and District Joint Town-Planning Committee and a number of local architects and their ladies.

At the conclusion of dinner and after the customary loyal toast had been honoured, MR. H. V. LANCHESTER proposed the health of Alderman Thomas Turnbull and the members of the Joint Committee in a few words.

ALDERMAN TURNBULL, in replying, referred to the pleasure it had given him and the Joint Committee to have the presence of such a distinguished body of town-planners at the conference.

Luncheon at the Town Hall.

On Saturday morning, after a visit to the Ship Canal and the Trafford Park area, members of the Institute were entertained to luncheon at the Town Hall.

On the conclusion of the repast the CHAIRMAN (Alderman Turnbull) gave the health of "The King, the Duke of Lancaster," which was duly honoured. The next toast was that of "The President of the Town-Planning Institute," proposed by the CHAIRMAN and replied to by MR. H. V. LANCHESTER.

THE CHAIRMAN then proposed the health of their guests.

MR. BRODIE (City Engineer, Liverpool), replying, said he thought it did not require very great vision to see that this conference would have results of very great importance. Referring to arterial roads in the United States, he said they in this country had some way to go yet before they approached the decision of New York, where their "Parkway" was 500 ft. wide as a minimum!

MAJOR NALL, M.P., said he would like to see the series of plans showing the possible development of Manchester hung up permanently in some prominent place. He regretted that in these plans Salford had not been included, as many of them thought the City and the Borough would finally be united.

MR. ALDRIDGE said there was no doubt that the conference and the exhibition would have a historic value. He thought they were entering into a period of great possibilities owing to the compulsory town planning which would have to be undertaken under the provisions of the Act between 1923-26. The work of the town councillor was really a continual struggle to undo the errors of the past and make better conditions possible for the future.

MR. G. L. PEPLER (Chief Town-Planning Inspector, Ministry of Health) said he had no idea when they were considering the question of the exhibition that they would get the Town Hall filled day after day by people coming to see what town-planning was; he thought the special facilities which had been arranged for schools were an especially valuable point in the education of the citizen as to the possibilities of town planning and the creation of a public demand for better conditions in their future towns than had obtained in the past.

ALDERMAN TURNBULL briefly replied, and the delegates proceeded on a tour of inspection round the various arterial road schemes in course of construction by the Manchester Corporation.

On Saturday evening delegates were entertained to dinner by the Lord Mayor and Lady Mayoress at the Town Hall; on the conclusion of the repast, and after the usual loyal toasts had been honoured, the Lord Mayor proposed "The Town-Planning Institute and the Manchester and District Joint Town-Planning Committee," which was responded to by Messrs. H. V. Lanchester, G. L. Pepler, Ald. Turnbull, and Councillor Shawcross. "The City of Manchester" was proposed by Mr. Clare Lees (president, Manchester Chamber of Commerce) and responded to by the Lady Mayoress.

THE ARCHITECTS' AND SURVEYORS' ASSISTANTS PROFESSIONAL UNION.

ON Wednesday evening last week the Pickwick Room at Carr's in the Strand was well filled with assistants from the offices of architects and surveyors in London and their friends. The attraction was the first event in the winter programme of the A. & S.A.P.U.—a smoking concert—and the good musical entertainment provided, together with the opportunity afforded of talking over matters of professional interest with men in other offices, made the four hours between 7 and 11 p.m. pass all too quickly.

The time allotted for speaking from the chair was strictly limited, and kept to a vote of thanks to the guests for their presence. This was proposed by the Chairman, Mr. C. Cathrow, and seconded by the Secretary, Mr. J. Mitchell, who specially welcomed the large number of guests, because their presence showed that the efforts of the Union to press forward the claims of the assistant were recognised as legitimate and fair by many practitioners.

Replying on behalf of the guests, Mr. John E. Yerbury, Lic.R.I.B.A., referred to the question of professional registration, and said it was the duty of everyone in the architectural profession to consider seriously the problem now before them. Registration, he sincerely believed, could never come before unification. He fully agreed that it was necessary for those entering the profession to have proper training and pass examinations set by the R.I.B.A., and thereby obtain their standing in the only way possible. But it must not be forgotten that they were out to close a profession which up to the present had been open; when any profession was changed from an open one to a closed one those who in the past had earned their living by the practise of that profession must be admitted. Whether or not they were of the same class as those who had passed examinations was not the point, for Parliament would never sanction any profession closing itself at the expense of a large body of men who had made their living by it. In referring to the work of the Union, he wished it every success. The assistant of to-day, he said, was the practitioner of to-morrow, but at present it was very risky to start in practice; there were signs, however, which showed that the building industry in London would in the near future be handling a considerably larger volume of business.

Amongst those present were Mr. George Carter (Borough Engineer of Croydon), Mr. J. A. Gould, Mr. W. C. Keay, Mr. H. R. Sayer, A.R.I.B.A., F.S.I., Mr. T. Braddock, Mr. Chas. McLachlan, A.R.I.B.A. Mr. T. Bilbow, Mr. W. S. Dalton, Mr. L. E. Wheble, Mr. T. Jelley, Mr. W. Candler, Mr. F. Williams, Mr. George F. Fox, and Mr. Frank Best.

VISIT TO THE SOANE MUSEUM.

A very interesting and instructive afternoon was spent on the following day, October 21, by a party of members of the Metropolitan Branch of the Union in a visit to the Soane Museum, Lincoln's Inn Fields. The party was received by Mr. Arthur T. Bolton, F.S.A., F.R.I.B.A. (Curator of the Museum), under whose guidance the visit was made. Beginning with the dining-room, one came into contact with treasures, such as original and rare Greek vases, bronze busts, models of beautiful architectural details from all corners of the earth, Sheraton and Chippendale furniture, and painting by masters of world repute. A portrait of Sir John Soane, by the late Sir Thomas Lawrence, P.R.A., attracted considerable attention. In the new students' room—formerly Sir John Soane's private study—Mr. Bolton, with the aid of illustrations on the walls, explained the different stages by which Sir John Soane conceived the plan of the Bank of England. Among the many other treasures of the museum, special interest was displayed in the Seti sarcophagus, in the sepulchral chamber. This is supposed to be over three thousand years old, and to have contained the body of Seti I, King of Egypt. It is carved out of one piece of alabaster, 10 ft. long, and covered inside and out with hieroglyphics. Passing to the picture room, the party was shown a very fine collection of architectural designs. The visitors were next conducted through the corridor, dressing-room, and little study, where examples of mediæval architecture, cameos, and examples of casts by John Flaxman, R.A., were found in profusion. After an interval for tea, provided by the kindness of the curator, a visit was paid to the drawing-room where the party saw the original sketches made by Robert Adam, which are now kept in a solid mahogany cabinet under lock and key.

On the motion of Mr. J. A. Gould (Hon. Secretary, Metropolitan Branch), seconded by Mr. Mitchell (General Secretary of the Union), a vote of thanks expressing the appreciation of the members present was accorded to Mr A. T. Bolton for his courtesy and hospitality.

Subsidies to French Departments and Municipalities for the Repair of Roads

As the result of a deputation from the office of the General Council of the Somme to M. Poincare, President of the Council, a credit of 110 million francs opened in the name of the Minister of the Interior, in accordance with the law of October 4, 1919, will be allotted for subsidies for the repair of roads in the devastated areas used by heavy wagons employed in the work of reconstruction.

ELECTRIC LIFT EQUIPMENT FOR MODERN BUILDINGS.—VII.*

BY RONALD GRIERSON, A.M.I.E.E., A.M.I.Mech.E.

METHODS OF SPEED CONTROL; CONTROLLER OPERATING DEVICES; SAFETY AND PROTECTIVE DEVICES; CAR SIGNALLING DEVICES; TRAVEL AND TRIP RECORDERS.

Methods of Speed Control.—The speed control of the lift motor is closely associated with the method of acceleration and may assist materially in smoothing it out. The method utilised depends upon the type of motor to be employed in the particular installation under consideration, the principal being the adjustment of the field strength on a d.c. shunt-wound motor, by connecting resistances in series and in parallel with a d.c. motor armature, by applying a variable voltage to the terminals of a d.c. motor, by applying several different voltages to the terminals of a d.c. motor, by changing the number of poles of an a.c. motor, and by changing the frequency of the supply to an a.c. motor.

With constant voltage at the commutator brushes, the speed of direct-current shunt-wound motors varies practically in inverse proportion to the change of field magnetism; that is, the weaker the field the higher the speed, and *vice versa*. The field magnetism changes with any change of the shunt field (excitation) current, though not always in direct proportion. The range of speed obtainable depends upon the design of motor, ten per cent. being usually regarded as the maximum for a standard type not fitted with interpoles. If a larger range is desired, the machine must be specially designed for the purpose, in order to ensure stable operation at the higher speeds and a larger and more expensive frame size is necessary. If the motor is massive and responds slowly to a change in field strength, little difficulty is introduced by this method, but if it responds quickly, relays or other devices must be used to limit the current during the change in speed. Since the field current rarely exceeds three per cent. of the main current, the rheostatic losses, when this method is utilised, are extremely small, and therefore the system is a very economical method of speed control.

A resistance, connected in shunt with a d.c. motor armature, has a stabilising influence, and limits the speed variation under different conditions of loading. This method is commonly used for obtaining the low speed from which a landing is made. It is the least economical system, and its use is therefore restricted, as a rule, to the purpose stated.

In certain cases special generators have been provided for each lift motor, and under these circumstances the lift motor can be operated from rest to full speed in either direction merely by changing the strength and the direction of the generator field.

When a battery of lifts is to be installed it is conceivable, but improbable, that it might be desirable to consider the question of utilising several generators driven by one motor, each generator giving a different voltage to provide a simple means of speed control. In this case the transition between voltages would be taken care of by armature resistances and the armature connections would require to be reversed in order to reverse the direction of rotation.

Since the speed of an alternating current induction type motor depends upon the frequency at which the supply is operated and the number of pairs of poles on the motor, it is obvious that, assuming the former value to be constant, the speed can be changed if it is practicable to obtain different pole combinations. Recent progress has made such motors available, provided with the combination of a large number of poles giving a low speed from which the landing is made and a smaller number of poles for the normal operating speed. The stator may have two sets of windings, one for each set of poles, or a single set arranged for two sets of connections.

As an alternative to the above method it is possible, by installing a frequency changer, to utilise a standard induction motor and to obtain the low speeds from which the landing is made by connecting it to the stator winding.

Controller Operating Devices.—A motor controller may be operated from the lift car or the landing in several ways, *i.e.* :—

a. Hand rope.
b. Car switch.
c. Push button (full automatic or semi-automatic).
d. Combined car switch and push button.

Hand rope control was the earliest method adopted for operating electric lifts and is now almost obsolete, except possibly for cheap slow-speed goods lifts. The hand rope, which passes through the car, reaches from the top to the bottom of the shaft and is arranged to start, stop and reverse by operating the spindle of a switch on the main control panel, depending upon the direction and the distance the rope is pulled (Fig. 53). The rope is fitted with two

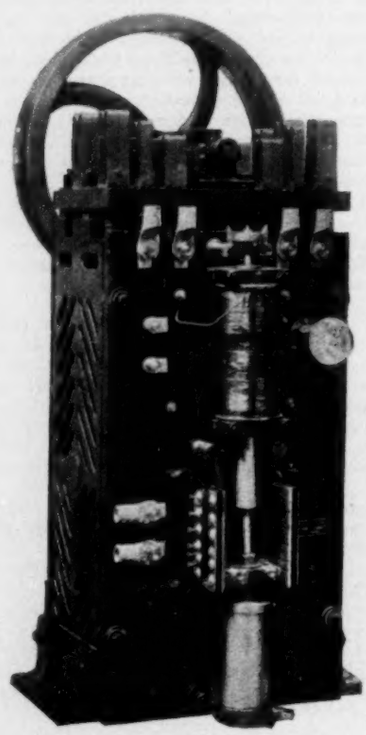


FIG. 53.—HAND ROPE CONTROLLER.

stops, one at the top and one at the bottom landing, together with a stretching screw to keep the rope taut. In the event of the attendant failing to stop the car when near the upper or lower floor, the car eventually comes into contact with one of the above mentioned stops on the hand rope and stops the lift automatically. A lever or hand wheel may be used for manipulating the rope in order to avoid the necessity of the attendant or passenger pulling on it directly. Another variation occasionally to be seen on the Continent is the provision of a series of push buttons corresponding to the floors. On entering the car the passenger presses the button marked with the floor at which he desires to stop. The rope is then pulled, and on arrival at the selected landing a claw or stirrup forming part of the push button engages with a stop attached to the rope, thus bringing the car automatically to rest.

The most satisfactory method of operating the car in a modern high-speed lift installation, running to schedule, is the car switch. The movement of the car switch handle to either side causes the car to travel in the direction desired, and on multi-speed lifts the desired speed can also be selected. The handle is almost invariably of the "dead man" or self-centering type, *i.e.*, returns to the "off" position, which should be very definite, immediately the hand is removed from the control handle. This handle should be detachable so that the attendant can retain possession of it, and the car, in the absence of the attendant, cannot be operated by an unauthorised person. For single-speed lifts, there are only three positions for the handle, *i.e.*, "Up," "Down," and "Stop," the work of releasing the brake, operating the reversing switch, accelerating switch, &c., being entirely automatic, once the car switch has been moved into the selected position.

For two- and three-speed lifts, the car switch is similar to that described above, except that between the "Stop" and the "Full speed" points there are one or more intermediate points to which the handle or key may be turned, according to the desired speed (Fig. 54). The car switch, which should be of neat design, and of substantial construction, should be finished to match the decorative work in the car. It is connected by a flexible cable, carrying the required numbers of insulated conductors, to the magnet-operated switches on the control panel or switchboard and operates the car by energising the magnets or solenoids of these switches.

FIG. 54.—CAR SWITCH (TWO-SPEEDS).

A desirable feature to standardise would be the car switch connections so that the movement of the handle or key toward the door or front of the car would cause it to travel downward, and a movement in the reverse direction would cause it to travel upwards.

Another method of operating the main control panel from the car is the push button system of control. A push button is located at each landing, termed the "Call Push," and inside the car a plate is fitted carrying a series of buttons, one button corresponding to each landing. Provided the car is not in use, and all doors and gates are closed, it is called to the desired landing by pressing the "Call Push." On arrival, both the landing doors and the car gate locks are released, and can be opened and closed by the passenger. The button corresponding to the landing or floor required is then pressed by the passenger in the car, the result being that the proper connections are set up in the main control panel to move the car to that particular landing and automatically to stop it on arrival (Fig. 55). Immediately the passenger enters the car, a floor switch automatically disconnects all landing call pushes.

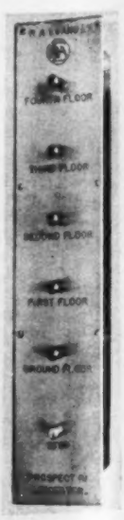


FIG. 55.—CAR PUSH-BUTTONS.

The control panel is substantially similar to that used in conjunction with the car switch system of control, with the addition that a floor selector switch is provided that is driven either positively

* For the last article in this series see our issue for September 15.

by the winding engine (if of the drum type) or by the car (if of the vee sheave type), and makes the connections that automatically stop the car at the desired landing (Fig. 56). Alternatively, tappet switches may be fixed in the

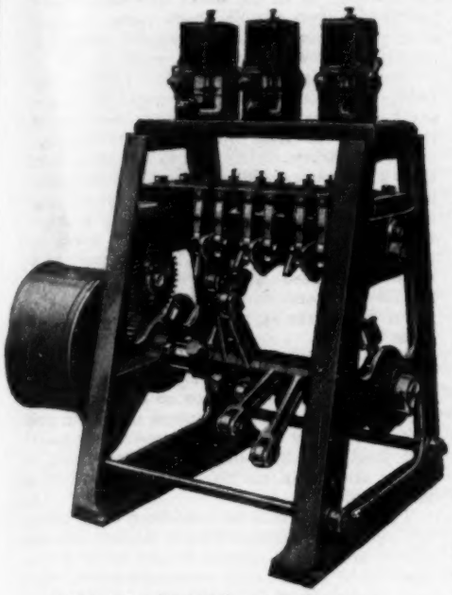


FIG. 56.—FLOOR-SETTING DEVICE.

shaft so that they will be operated by the car, but they are liable to be noisy in operation. To obtain satisfactory floor levelling they should be fixed on adjustable frames (Figs. 57 and 58).

This type of control has a particular field of application in flats, small hotels, clubs, Government and similar buildings, where the traffic does not warrant the expense of a regular attendant or operator. The limiting speed is usually considered to be 160 feet per minute, unless a two-speed controller is provided.

FIG. 57.—SHAFT TAPPET SWITCH.

A variation of this method, frequently termed semi-automatic, allows for only three push buttons in the car whatever the number of floors served, marked "Up," "Down," and "Stop" respectively. Assuming the car is at an intermediate landing momentary pressure on either of the first two buttons starts the car and the movement continues until the "Stop" button is pressed, or the car arrives at the upper or lower landing, where it comes into contact

FIG. 58.—CAM FOR OPERATING SHAFT TAPPET SWITCH.

with a landing limit switch fixed in the shaft, and is automatically brought to rest. It is a cheaper system than the full automatic first described, and is suitable for car speeds up to 160 ft. per minute, although possibly 130 ft. per minute is more desirable.

Either form of the push button control is necessarily more elaborate and complicated than car switch control, and, as such, it is probably slightly less reliable. It is certainly a time and power waster, because so many trips are made with light loads and without regard to floor demands, *i.e.*, the first person who presses the button secures and retains the car until he has completed the journey irrespective of all others who may be actually passed on the trip.

A combination of car switch and push button control may be advantageously employed in certain installations when the traffic justifies the employment of an attendant for only part of the time that the car must be in service, *e.g.*, large blocks of flats, clubs, and certain office buildings of considerable height. Its first cost is higher than any other type, but the saving in wages will, in many cases, justify its adoption. A special switch is supplied by which the change over from push button to car switch control is effected, and in the majority of cases it will be found desirable to provide for two speeds on the car switch and single speed only on the push button control.

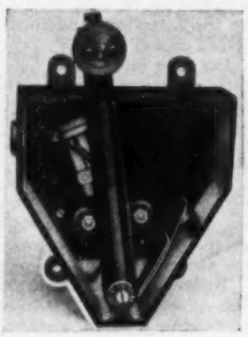


FIG. 59.—TERMINAL LIMIT SWITCH.

Safety and Protection Devices.—The principal safety and protective devices employed in connection with lifts are as follows:—

(*a*) Guide grips and overspeed governors (discussed previously).
(*b*) Car safety switch.
(*c*) Terminal limit switches.
(*d*) Overtravel limit switches.
(*e*) Slack cable switch (drum drive only).
(*f*) Door and gate safety switches and locks.
(*g*) Compensating cable switch.
(*h*) Buffers and air cushions.
(*i*) Phase failure protective devices } A.C. motors only.
(*j*) Phase reversal protective relay }

The car safety switch is more usually seen in American than in English lift cars. It consists merely of a single pole switch connected in a cable of the opposite polarity to that connected to the car switch, so that in the event of the failure of the latter, due to earths, short circuits, mechanical damage, &c., the car can be stopped by the attendant.

Terminal limit switches, which are usually self-setting, are located at the upper and the lower landings, and are employed for the purpose of bringing the car to rest should the attendant be negligent in this respect. They may be mounted on the car and operated by cams in the shaft, or *vice versa* (Fig. 59). Another method is to extend the spindle of the car switch handle through the side of the car and to fix a lever to it. When the car is approaching either of the extremes of travel the lever engages with a cam suitably located in the shaft, and this forces the car switch into the "stop" position, thus bringing the car to rest.

On drum type winding engines these terminal limit switches may be geared to the winding engine, since the ropes are made fast to the drum, and certain positions of the drum definitely correspond to floor levels. Ultimate or overtravel limit switches are almost invariably fixed in the shaft, and are usually connected on the main circuit, so that when they operate all current is definitely and immediately cut off from the motor without the intermediate action of any magnet operated on other switches. They are operated by cams fixed on the car, are placed beyond the normal range of travel, and are employed to stop the car should the attendant forget to operate the car switch and the terminal limit switches fail—a dual combination of accidents and negligence.

As such an event is undoubtedly serious, it is desirable deliberately to arrange the connections in a manner such that the car cannot be backed out or operated in the reverse direction merely by working the car switch. By this arrangement the attention of a responsible person is drawn to the incident, and he should see that the cause of over-running is attended to before again putting the lift into service.

Slack cable switches are chiefly fitted to drum machines, and function in the event of the car or the counterweight becoming stalled or held up in the shaft. They operate immediately the cables slacken. In the absence of this safety device the ropes would continue to unwind, and should the cause of stalling be of a temporary nature and the car release itself it would immediately fall to the full extent of the cable unless the car safety gear operated.

"Protection of Hoists," issued by the Home Office, London, states: "A large number of hoist accidents are caused by crushes between the travelling cage and the door lintels or other projections in the hoist well. Practically the whole of these would be prevented by fitting a collapsible gate on the cage itself, but to ensure that the gate is used *it must be provided with interlocking mechanism* which requires the gate to be closed before the cage can be started. In addition to the gates on the cage itself, each doorway should be provided with a

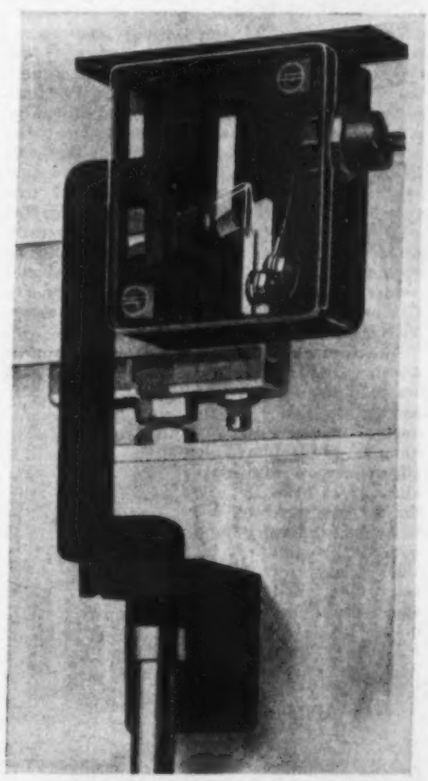


FIG. 60.—ELECTRO-MECHANICAL INTERLOCK FO SLIDING DOORS.

gate or door, fitted flush to the inside of the well, so constructed that it cannot be opened until *the cage is at rest* opposite to that floor or landing; and (2) that the cage cannot be moved away until the door or gate is closed and fastened."

Statistics collected by the U.S.A. Bureau of Standards show that 73.8 per cent. of all fatal

accidents might be prevented by well-designed interlocks fixed to landing doors.

All forms of landing door protective devices may be broadly classified into three divisions, according to the method of locking the car and the landing door, *i.e.* :—

(*a*) The mechanical type.
(*b*) The electromechanical type.
(*c*) Electrical contact devices.

The first type of safety lock depends upon mechanical action to lock the car control mechanism while the door is open, and to hold the door in the locked position when the car is not at the landing. Substantial latches or rotating bars are frequently employed for locking the door in conjunction with slotted flaps or stirrups, operated by bolts or rods, to lock the car switch in the neutral position. Parts of the device which are located within the car should be enclosed to avoid risk of interference which might render them inoperative.

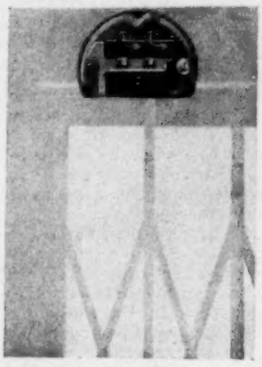


FIG. 61.—ELECTRIC DOOR OR GATE CONTACT.

Electromechanical interlocking devices are more popular than the purely mechanical types, and can be entirely relied upon to prevent shaft-door accidents if of sound design and manufacture and adequately maintained. In this type the door is mechanically held closed and the car is interlocked by some form of electrical control. This may be accomplished either by interrupting the master or control circuit, or by running an independent circuit that will interrupt the operating current on the machine control board. An essential feature of this type of control is that the electrical contact should be made *after* the door is mechanically locked and, if possible, the design should be such that failure of the door to lock should render the electrical contact inoperative (Fig. 60). Otherwise the car would be able to move away, leaving the door unlocked.

The third class of door safety devices comprises a wide variety of electrical landing, door, and gate contacts that are usually connected in series in the control circuit and are known as the shaft series system. The difference between this class of safety device and the electromechanical interlock should be carefully noted. The contact device merely prevents the car being moved until all landing doors are closed, but it is possible to open any door with the car in any position in the shaft, although of course the car, if in motion, would automatically be brought to rest (Fig. 61).

FIG. 62.—EMERGENCY RELEASE SWITCH.

Ordinary latches, operated from the car side, are used to hold the landing doors closed, but the attendant or passenger must then be relied upon to operate the latch. A survey made by the U.S.A. Bureau of Standards of several hundreds of landing doors, indicated that 30 per cent. of the latches were out of order, due chiefly to worn latch parts, worn door hangars, loosening of latch from door, and lack of lubrication. It was also found that many latches were so poorly designed that if the door were closed quickly the rebound of the door would occur before the latch engaged.

When electrical interlocks are provided it is not unusual to locate an emergency switch or release device in the car so that in the event of fire, panic or other emergency, or if the car stops in the shaft due to the failure of the door safety circuit, the operation of the emergency device will permit the lift to continue in operation. Such a device, if provided, should obviously be of the spring or push-button type which must be held in the emergency position by the attendant and should be enclosed in a glazed case (Fig. 62).

For lifts installed in high buildings on which compensating cables are fitted a compensating cable switch may be provided and connected so that it is opened by the raising or lowering of the compensating cable sheaves in the pit. The switch interrupts the control circuit should the sheaves lower to any appreciable extent due to cable stretch. Also, in case of the counterweight or car becoming stalled in the shaft, the compensating cable sheave will rise and operate the switch to cut off the power (Fig. 63).

Buffers are desirable under the car and under the counterweight. For low speeds a spring alone is used, but for higher speeds a combination

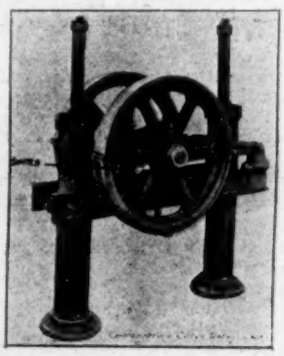


FIG. 63.—COMPENSATING CABLE SWITCH.

of oil dash pots and spring is necessary. They should provide a retarding effect so that the maximum retardation will not exceed 64·4 feet per second. Air cushions, obtained by forming a practically air-tight shaft at the lower end for a certain percentage of the total height, have been used for the purpose of retarding the motion of a falling car, but have been practically abandoned as unnecessary to safety.

Phase failure protective devices are only necessary on two- and three-phase motors. The desirability for employing this apparatus is due to the fact that in a two-phase motor there are two, and in a three-phase motor three, separate windings, each of which contributes its quota of power to the motor shaft and hence to the driving sheave or drum. In the event of failure of one conductor, the one remaining phase, fed by two of the conductors, is heavily overloaded, and unless the motor is stopped, excessive heating and, eventually, failure of that phase winding would occur.

Protection can be secured by inserting series trip coils in two of the phase leads, the action of the coil being delayed by a time-lag device. By this means, no action will take place until the overload on the second phase has existed for a predetermined period (10 to 15 seconds), thus allowing for momentary overloads at starting, but providing adequate protection against continued overloads that would damage the windings.

Similarly, phase reversal protective devices are desirable for multiphase alternating current motor circuits. With a d.c. motor, of either the series or shunt type, no alteration in the direction of rotation occurs if the main conductors feeding the motor are reversed. On the other hand, the direction of rotation of either a two- or a three-phase induction motor is reversed by changing over two of the main leads. Unless, therefore, phase reversal protection is included on the control panel, any repairs to the distributing system either in the building or in the street that accidentally resulted in two supply leads being changed over, would cause the lift to ascend when it is required to descend and *vice versa*.

Signalling Systems and Methods of Operating Lifts.—Signalling devices frequently receive scant consideration, although they form one of the links in the chain of modern elevator equipment, and failure of any link in a chain renders it, as a rule, more or less useless for its intended purpose. Continuing the analogy, just as a dog chain would be unsuitable for lifting a ship's anchor so a signalling device which could be applied, with every prospect of success, to a single slow-speed lift would be a failure if installed in connection with a group of high-speed lifts running to schedule in a modern office building.

Apart altogether from the effect, beneficial or otherwise, of a particular signalling system on the efficiency of the service to the tenants, it will, if properly designed, ensure minimum cost of operation by eliminating unnecessary travel and landing calls, and reducing the cost of power and wear on the working parts to a minimum.

The chief points to be considered when selecting signalling equipment for a modern installation of lifts are the number of cars in one group, their speed and location with reference to other cars or groups of cars, the purpose for which they are to be used, and their method of operation, *i.e.*, on call, or running to schedule.

Cars operated on the "On Call" system remain at the ground floor until a call is received, then one car answers the call and carries the passenger to his or her destination. Such a method of operation is suitable for installations up to three cars, located in institutional buildings, hospitals, municipal buildings, small hotels, and office buildings, &c.

Where three or more lifts are installed in a group in large office buildings, stores, hotels, &c., the schedule system of operation is usually found to be more economical. This is the tube or tram system of operation applied to vertical transportation, since the cars run from the bottom to the top of the shaft and return to the bottom again in continuous rotation irrespective of the calls received from the upper floors or the passengers to be carried from the ground floor.

Types of Signalling Equipment.—In large office buildings, the ideal signal system should notify the operator of the first approaching car, in which direction the passenger desires to travel, and the floor at which the passenger is waiting, and this notice should be given in a decisive manner, without taking the operator's attention from his duties. It should also tell the waiting passenger which of the several cars will arrive first, and give him ample time to get to the proper landing door, thus avoiding delaying the car when it arrives.

FIG. 64.—OPERATOR'S SIGNAL LIGHT.

Lamps are more popular than bells or buzzers for calling the attention of both the passenger and the operator, as they are noiseless, and are local rather than general.

A signalling equipment, suitable for the types of building mentioned, is known as the Complete Flashlight System. It provides an operator's signal light in each car (Fig. 64); an "Up" and "Down" passenger signal lantern placed

over each landing door (Fig. 65) in plain view of the waiting passenger; and an "Up-Down" push button box conveniently located in the corridor at each floor. The operator is signalled by the flash of one lamp, which he can see whether or not he is looking in that direction. Similarly, the waiting passenger is signalled by the flash of one lamp that immediately attracts his attention and directs him to the landing door at which the car will stop.

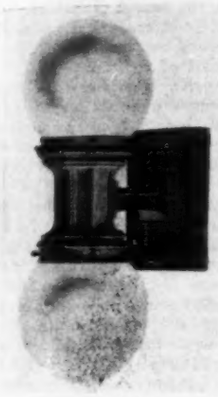


FIG. 65.—UP-AND-DOWN PASSENGER SIGNAL LANTERN.

The controlling mechanism, which is located in the engine-room, is designed to accomplish the following results on the pressure of the "Up" or "Down" landing button by the waiting passenger:—

(*a*) Notify the attendant of the nearest car travelling in the required direction, when his car is within one-and-a-half floors of the landing at which the passenger is waiting.

(*b*) Illuminate the landing lantern corresponding to that car, three floors in advance of the car's arrival.

(*c*) Extinguish both car and landing signal lamps when the call has been replied to by the arrival of the car.

In each car a transfer switch, or button, is provided so that, should the nearest car be full, the operator can transfer the call to the next approaching car, and thus relieve the passenger of the necessity of pushing the button again after the first car has passed.

A cheaper type is the Operator's Signal. It is similar in character to that described above except that the landing lanterns are omitted, *i.e.*, it notifies the car attendant when to stop, but the waiting passenger is not instructed at which door to wait for the car. This modification would be suitable for a group of not more than four lifts in which the doors are relatively close together.

Lift cars in large stores are frequently operated on the local schedule system, *i.e.*, each car stops at each floor, both on the up and on the down trip, so that landing door call buttons are not required. Waiting passengers must, however, be notified at which door to wait, and an "Up" and "Down" signal lantern is therefore required over each landing door on each floor, *i.e.*, for a group of six lifts serving six floors in addition to the ground floor, thirty-six double "Up" and "Down" signal lanterns would be required.

For hotels, clubs, flats, and similar buildings in which the traffic does not call for a regular schedule, or for any car invariably to make the complete trip, the Flashlight Annunciator System is frequently found to meet all requirements. The equipment installed in connection with this system includes one "Up" and "Down" push button box at each floor, the necessary controlling devices in the engine room and a signal panel or annunciator box fixed in each car containing two vertical rows of miniature lamp indicators, numbered to correspond to the landings and coloured, one red and the other white, representing the "Up" and "Down" signals respectively. As the lamps are small, a buzzer is frequently connected in circuit to give an audible warning to the operator that a call has been registered.

A call from any landing is signalled in all cars simultaneously by the illumination of the appropriate lamp indicating the landing from, and the direction in which the waiting passenger desires to travel. The lamps in all cars remain illuminated until one of the cars answers the call, whereupon all lamps are automatically extinguished by the controlling mechanism (Fig. 66). In lieu of lamps, indicators of the type commonly used in connection with electric bell installations may be employed, and fixed in the cars, the automatic clearing feature being still retained.

For single car installations the straight electric bell, with pendulum or mechanical replacement indicator, forms the cheapest system of signalling, and is largely employed in this country. In this case push buttons are fixed at each landing door, and the indicator is located in the car. The indicator should preferably be fitted with two rows of flags, and "Up" and "Down" push buttons are fixed at the landing doors, since time is lost if the car stops on the "Down" trip in response to a call from a passenger who desires to travel in the upward direction and *vice versa*.

Car Position Indicators.—Car position indicators are of two main types, *i.e.*:—

(*a*) Mechanically operated.
(*b*) Electrically operated.

For small installations the former is a distinct aid to the service as, when installed at each landing door, it forms a means of notifying a waiting passenger that his call is being answered, and he therefore waits more patiently for the car than he would otherwise probably do. In low buildings they also enable a passenger to determine whether it is worth while waiting for the car.

When applied to grouped lifts and fixed at the ground floor, they enable the "starter" or foreman to observe the operation of each car and how they are spread in the shafts. Any undue delay or loitering on the part of the operator can be immediately noted (Fig. 67).

For large installations, separate position indicators become rather scattered and difficult to maintain under close observation. Grouping of the indicators then becomes desirable, and an ornamental bronze panel termed an "Electric Position Indicator" is the solution. It contains as many vertical rows of miniature lamps as there are cars in the group or groups, one lamp in each vertical row representing a floor served by the car. As the cars pass the floors, the lamps are illuminated, and the position of each and every car may be seen at a glance. By the addition of a "Starter's Signal" and a telephone to each car the electric position indicator may be converted into a complete control station.

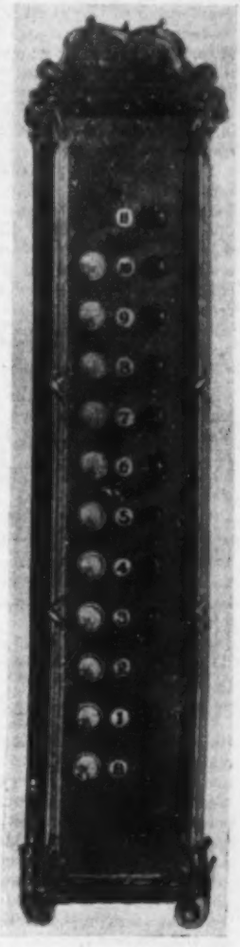


FIG. 66.—OPERATOR'S FLASHLIGHT ANNUNCIATOR

For an installation of grouped cars, placed under the control of a "Starter," dispatcher, or foreman, an electric bell may be fixed in each car, the pushes corresponding to the bells being located at a convenient point in the hall or on the "Electric Position Indicator."

For important groups of lifts a special telephone equipment is a desirable addition to the equipment. In this case, instruments would be fixed on the "Electric Position Indicator" in each car, in the engine room, and, if this is in the basement, in the overhead gear chamber also. In addition to giving the dispatcher the means of keeping constantly in touch with the operators or attendants, the telephone has advantages in case of emergency, accidents, or when repairs are being made.

Automatic Starting Signals.—For a group of two cars it is frequently found to be desirable to hold one car at the top of the shaft and one at the bottom until a call is received or a sufficient number of passengers has boarded the

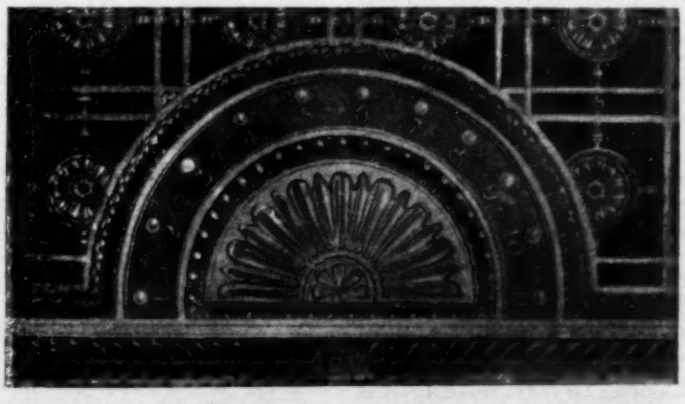


FIG. 67.—ELECTRIC LIGHT INDICATOR.

FIG. 68.—TRAVEL RECORDER

car at the ground floor. One car then starts on its journey, and it is convenient to arrange for a buzzer automatically to signal the other car to start in the opposite direction so that the cars change places and again wait at the top and bottom landings until another trip is necessary.

For larger groups, in which the cars run to schedule at intervals of thirty seconds or so irrespective of the number of passengers in the waiting car at the ground floor, the desirability of installing a motor starting device of the bell-ringing type should be carefully considered. This apparatus, which is motor-driven, in the main hall, automatically rings a bell at regular intervals, the interval being adjustable between the limits of ten and thirty seconds.

Travel and Trip Recorders.—To enable accurate records to be obtained and statistics prepared for the purpose of comparing the cost of operation and repairs, instruments that will record the total mileage travelled and the trips made by each car are a desirable accessory (Fig. 68). By this means all costs can be reduced to a car-mile basis and any fluctuations noted immediately. Similarly they are useful in checking the life of the ropes, and thus to determine if they are up to standard.

[*** The author desires to express his appreciation of the assistance rendered by Messrs. Marryat & Scott, Ltd. (for Fig. 53); Messrs. R. A. Evans, Ltd. (for Figs. 54, 55, 57, 58, 59 & 61); to Messrs. Express Lift Co., Ltd. (for Fig. 56) to Messrs. The Elevator Supply and Repair Co. (for Figs. 60, 62, 64, 65, 66, 67 & 68); and to the American Institution of Electrical Engineers (for Fig. 63).]

(To be concluded.)

REPORT OF THE RENT RESTRICTION COMMITTEE.

The report of the Committee appointed to consider the Rent Act has been issued and according to the summary published it appears a most inconclusive document. The Committee recommends that protection of tenants against eviction and unreasonable increases in rent as afforded by the Increase of Rent Act should not be withdrawn when that Act expires in June next, but that in future legislation regard must be had to certain points in the light of experience of the present Act. In the summary of the Report amongst other matters are the questions as to period or duration of the further protection, sub-tenancies, the eviction of undesirable tenants, and the position of owners of one house who require that house for their own occupation. The Report states that "upon these and other matters time has not afforded us the opportunity of making precise recommendations. Some of our members desire for the present to reserve their judgment upon the point whether or not the upper rental limits of the houses to which the present Act applies should remain unaltered."

We, of course, have not access to the evidence which has been laid before the Committee, but a close study of the working of the Rent Restriction Act and the legal decisions which have been given upon it have convinced us that the continuance of this measure in its present form is most prejudicial to building operations, restricts housing accommodation, and unduly favours one class, the sitting tenants, and that in time of peace such legislation is an anomaly.

The reports of committees are not conclusive, and it is well known that they have homing tendencies to the pigeon-hole which at present is unrestricted; at the moment, with a change of Government, it is impossible to say what may happen, but we may venture to hope that whatever Government may eventually be formed the continuance of war measures in peace time will not form part of its programme.

Obituary.

The death of Mr. William French, head of the firm of Messrs. W. & C. French, contractors, &c., Buckhurst Hill, took place at the Forest Cottage Hospital, Buckhurst Hill, on Friday last week.

THE CONCRETE INSTITUTE.

An Extraordinary General Meeting of the Concrete Institute was held in London on October 19, to confirm resolutions passed at an Extraordinary General Meeting held on September 28 with regard to proposed change of title to "The Institution of Structural Engineers." The President (Mr. E. Fiander Etchells) was in the chair.

After the minutes of the last meeting had been confirmed and signed, Mr. Wentworth-Shields moved:—"That this meeting confirms the resolution passed at the last Extraordinary General Meeting, held on September 28, 1922—'That the name of the Company be changed to The Institution of Structural Engineers.'" In speaking to the resolution, he said he believed they were very nearly all agreed that the proposed change of name was the natural outcome of the work they had been doing in the past, and was due to a desire to express the work they had been doing and were continuing to do in a more logical manner than they had hitherto done. Until 1908 there was no special institution dealing with structural engineering, but in that year the Concrete Institute was formed and took up structural work, broadly; and he believed they would all agree that it had more than justified its existence. The fact that the membership rose to over 1,000 in a very few years, and that the Institute had a printed record of work to show, told very clearly that there was really a very great demand for an institution of that kind. When it was first established it dealt particularly with concrete and reinforced concrete, but very soon it enlarged its borders and admitted those who were interested in allied branches of structural engineering, and he believed not a single one of them doubted that this broadening of their interests had been of immense advantage to the Institute and to the profession at large. The resolution was the natural and logical outcome of that state of things. They now included within their borders—and were glad to include them—men who had other interests than concrete, who were interested in the many problems that structural engineering involved. They felt they were doing a good work for the profession by including them and allowing them to gain experience and to help one another in the many problems which structural engineering involved. Therefore, they wanted to impress upon themselves, and upon the whole world, what their sphere of usefulness was, and they felt it was sensible and right that they should take a title which would convey that.

Professor Henry Adams, in seconding the resolution, said at the last meeting the resolution was carried by an overwhelming majority, and the meeting that evening was merely a formal one for the purpose of confirming it. It would be a graceful act on the part of the small opposition if they would abstain from voting against the resolution that evening, so that it might be carried *nem con.*

Mr. Yeatman said he had hoped the Concrete Institute might have continued under its old and most appropriate name, but the majority at the last meeting seemed to think differently, and he did not see a sufficient proportion present that evening to make it worth while opposing the resolution.

The resolution was carried unanimously.

Mr. Jardine then proposed a resolution embodying alterations in the articles of association necessitated by the change of title, and this was seconded by Mr. Barnes, and carried *nem con.*

Mr. Spencer proposed:—"That this meeting confirms the resolution passed at the last Extraordinary General Meeting, held on September 28, 1922—'That the new Articles of Association already approved by this meeting and for the purpose of identification subscribed by the Chairman thereof be, and the same are hereby, approved; and that such Articles be, and they are hereby, adopted as the Articles of the Company in substitution for and to the exclusion of all the existing Articles thereof.'"

Mr. Gower Pimm seconded the resolution, which was unanimously passed.

L.C.C. AND BUILDING COSTS.

At last Tuesday's meeting of the London County Council, the Housing Committee reported that it had accepted, subject to the approval of the Minister of Health, the tender of Messrs. W. Alban Richards & Co., Ltd., for the erection of 168 houses on the second section of the Roehampton estate at a cost of £62,801.

Lieut.-Col. Cecil Levita (Chairman of the Committee), in moving the adoption of the Report, said that the actual cost of the houses as compared with the cost in 1914 represented an increase of about 80 per cent., but a decrease of approximately 60 per cent. on the prices which obtained in 1920–21. He reminded the Council that last year, on the advice of the Housing Committee, they broke off the contract for the first section and paid the contractors £40 in respect of each house not built. That step was taken at a time when prices were very high, and when, reckoning the all-in costs, the expenses per house were nearer £1,500 than £1,000. The Labour Party on the Council, whose administrative horizon was not bounded by any financial considerations, and who fought tooth and nail against the breaking of the contract and the alleged wastage of public money in paying the contractors £40 per house, would be interested to learn that the amount saved to the Council by that procedure—the curtailment of existing contracts and the adoption of new and simplified plans—was no less than £165,000. At the same time they were adhering to amenities and a standard of comfort quite worthy of the London County Council.

Mr. Edwin Evans thought it inadvisable that it should go out to the public at large that houses could be built for £350. That price did not include land, roadmaking, sewering, paving or gas. They heard a lot of appeals to private enterprise to come out and build, but the main reason why private enterprise could not do so was because of the competition to which it was subjected by the London County Council and other municipal bodies. Building at economic prices was impossible until they had co-operation between private and municipal enterprise and labour.

[The contract comprises 81 three-roomed houses (living room and two bedrooms) with scullery and bathroom, 45 four-roomed houses (living room and three bedrooms) with scullery and bathroom, and 42 four-roomed houses (living room, parlour and two bedrooms) with scullery and bathroom, the average prices being: three-room type, £359 12s. 1d.; four-room (non-parlour), £368 17s. 9d.; four-room (parlour), £406 9s. 10d.]

EDUCATION AUTHORITY'S PLANS.

At the monthly meeting of the Fife Education Authority last week, the Works Committee recommended, with reference to the appointment of an architect for Crombie new school, that Mr. Storrar, Cupar, be appointed, failing whom, they recommended Mr. J. T. Scobie, Dumfermline.

Provost Smart, Buckhaven, asked if it was not possible to have the architectural work carried out by their Master of Works, Mr. Sandilands. He thought that if the Master of Works prepared the plans, &c., they would save hundreds of pounds.

Provost Smart thought it was a job being manufactured for some outside architect. The proper and only successful procedure would be, if the department was over-worked, to engage a temporary assistant and have the plans prepared themselves.

Mr. W. Black, Charlestown, remarked that there were fifteen or sixteen names put into a hat and "rumbled" up, and Mr. Storrar's name was the first drawn out. All were qualified men, and the Committee's opinion was that any one of them would be suitable for the job. The minute was agreed to.

THE BUILDING TRADE.

THE PRESERVATION OF IRON AND STEEL.

In his Presidential Address to the Oil and Colour Chemists' Association, on October 12, Dr. J. W. Newton Friend dealt mainly with experiments he has carried out in regard to the preservation of iron and steel from corrosion and rust. He referred to the estimate made by Sir Robert Hadfield that 28 million tons of steel were lost annually by corrosion, and said that if an average of £20 per ton were taken the monetary loss amounted to nearly £600,000,000 per annum.

Dealing with the results of experiments he had carried out at Birmingham and Worcester, he said a number of mild steel plates, charcoal annealed and thoroughly cleaned, were painted with a definite quantity of paint and were exposed to the air in the form of a fence. The plates were exposed for five years and examined at various periods; the loss after one month in the case of five precisely similar plates was quite different. In Plate No. 1 the loss was 1.55 grams.; plate No. 2, 1.25 grams.; plate No. 3, 1.35 grams.; plate No. 4, 1.60 grams.; and plate No. 6, 3.95 grams. In all the series of plates it was found there was one which was more erratic in its behaviour than the rest, and he suggested it was due to some physical or chemical difference. The possibilities of error in making the experiments were set out as impurities in the metal; variation in the weather; positions of the plates; application of the paint; extent of corrosion and method of weighing.

Discussing the functions of a perfect vehicle, he said it should protect the painted surface, bind the pigmentary particles, and expand and contract with the painted surface. Linseed oil rapidly absorbed oxygen, giving a clear substance known as linoxyn, the chemical composition of which was still a matter of discussion, but it was this fact which gave linseed oil its good properties. If linseed oil were a perfect vehicle it would not allow moisture to penetrate the linoxyn. It was a disadvantage that linseed oil should be slightly porous, and in order to see whether the porosity could be reduced some experiments were carried out which led to the conclusion that if linseed were heat treated to get polymerisation it was possible to reduce the porosity.

The functions of a perfect pigment were detailed as follows:—Mechanical support to linoxyn, reduction of paint permeability, increase of viscosity, and reduction of the amount of expansion on setting. The lecturer said he did not suppose there was a perfect pigment, although a greater degree of perfection had been reached in that than in oil. Experiments had been made upon the effect of colour of the pigment upon the durability of a paint. The experiments were with red, black and white pigments, and it had been found that in daylight the effect was different from that obtained in the dark. In the dark all three behaved similarly, but in the light oxidation was very much more accelerated in the case of white. It was obvious from those experiments that colour had a great deal to do with the disintegration of paint once it had been applied. The nearer one got to the red end of the spectrum, or the black, the longer was the paint likely to last.

Another important point was the fineness of the pigment. The physical properties of a pigment were largely influenced by the state of subdivision, and the finer the pigment the more thoroughly would it become incorporated with the oil. The best paint could be expected when the pigment was finest, generally speaking, but there were other things to be considered. The pigment might lose body as it became exceedingly fine and the cost of grinding might become disproportionately large after a certain diameter of particle had been reached. His experiments showed that after a pigment had been ground to a good commercial quality, say 200 mesh, it had reached a very efficient state of subdivision, and very much finer grinding would only affect the paint to a small extent. As to the effect of variation of pigment percentage, the best result appeared to be obtained with 60 per cent., which was about the percentage which practice had found to be the best, and it seemed that by accident rather than otherwise painters had hit upon the best proportion for a mixture for painting steel. The pigment had got a maximum concentration for which it gave the best results with linseed oil. His experiments had also shown that several thin coats of paint retard corrosion better than one thick coat. The best results were obtained with one thin coat and one thick coat of paint so far as prevention of corrosion of steel was concerned. Whereas, however, in the case of surfaces exposed to the air an increase in the total thickness of the paint prevented corrosion, with subaqueous surfaces there was an optimum thickness of paint after which corrosion increased enormously. That optimum thickness was about 7 to 9 lb. per 100 sq. ft. in the case of the sub-aqueous tests he had made.

Finally, reference was made to the effect of leaving mill-scale on steel as a means of preventing or retarding corrosion. Although mill scale was a means of preventing corrosion, the point was that in making up steel the scale was broken in various places and moisture got in at those places and set up corrosion.

In the course of a short discussion, Mr. Noel Heaton said at the present time there was a great vogue for painting outside work, so far as buildings were concerned, with white and light stone-colour paint; those were the worst possible colours from the point of view of durability. It seemed that a pale pink ought to be adopted instead of white or stone colour, although that might not be very nice from the æsthetic point of view. The next best colour for the purpose might be grey, but there was enough greyness about London, Birmingham, and similar places through the dirt that so quickly covered the surfaces of buildings. With regard to mill scale, it was the fact that it formed a perfect protection against corrosion, but if it were left on for that purpose difficulties were introduced for the reason mentioned by the President.

NEW BUILDINGS IN LONDON.

Baker-street and King-street.—Messrs. Druce & Co., Ltd., have been making very extensive alterations and additions to their premises in Baker-street and King-street. The blank wall on the corner has been shored up and a new window of 22 ft. width inserted. The whole of the King-street frontage has been remodelled by removing the original shop fronts and fitting new show windows extending between floor and ceiling and the utmost width. The shop fitting is of neat mahogany framing on polished Labrador granite set between well-proportioned piers with fluted pilasters, the whole surmounted by a continuous cornice. The design is Georgian in character and carried out in imitation stone with Atlas white cement. The Baker-street frontage is being treated in the same manner. Additional premises were acquired and modernised for use as a spacious counting house, board room, studio, staff kitchen and tea rooms. The well-known porch of the Portman Rooms has been demolished and the two shops and entrance of Portman Rooms are being modernised in similar character to the corner block, new communicating openings being made from each of these shops directly into the main showrooms, which extend the whole length from there to King-street corner. The architect is Mr. John Hudson, F.R.I.B.A., of 131, Baker-street. The whole of the alterations, shop fitting, &c., have been carried out by Messrs. Druce's own staff under the personal superintendence of Mr. A. Hewson, manager of Building Department. The external plasterwork is by Messrs. Palmer Bros., Fulham, and the polished Labrador granite by Messrs. Fennings, of Palace Wharf, Fulham. New goods lifts have been installed, also the fireproof doors by Messrs. Christopher & Sons, of Clerkenwell-road. The pavement lights are by Messrs. Hyatt of Farringdon-road.

Richmond.—The Underground Railways have announced that a development scheme is pending for continuing the Piccadilly Tube beyond Hammersmith and linking up this line with Richmond and Hounslow. Westminster Station is to be practically rebuilt, escalators are to be installed at Tottenham Court-road, Bank, Shepherd's Bush, Bond-street, and the escalator equipment at Oxford-circus station is to be improved. At all these stations the booking office arrangements are to be re-arranged.

Edgware Road.—Mr. Lewis E. Nunn, M.R.San.I., is extending his premises and has taken over 431-433, Edgware-road. The upper part is being converted into flats. There are no subcontracts to let.

Port of London Authority.—Works of the Authority's programme already authorised include the following:—London Docks: A six-story wool warehouse at the Western Dock; a quay and shed extensions at the Eastern Dock; a quay and three-story shed on the north side of Shadwell Basin; and a quay and a three-story shed on the south side of Shadwell Basin. West India and Millwall Docks: A lock 650 feet long by 80 feet wide, with a depth of 41 ft. 3 ins. at T.H.W., a turning basin connecting the Import, Export, and South Docks, and a passage to the Millwall Docks; a large dry dock and a pumping installation to deepen the water in the South Dock, Millwall Docks, and Import and Export Docks, together with sheds, roads, railways and equipment; a grain depot at the north end of the Millwall Docks including a barge dock and a silo granary with a capacity of 40,000 tons, and the equipment of three deep-water berths in the South West India Dock, with appliances for the discharge of grain in bulk. East India Docks: A quay and two-story shed at the Import Dock, and the provision of accommodation for the discharge of meat; a quay and two sheds on the south side of the Export Dock. Surrey Commercial Docks: An extension of the South Dock, the deepening of the existing South Dock, a large dry dock, &c. Tilbury: A floating passenger landing stage, adjoining the Midland Railway Station, 1,700 ft. long. The following further improvements are contemplated, and in some cases preliminary steps have already been taken:—East India Docks: Further improvement and development of the Dock system generally. Royal Victoria and Albert Docks: A dock 126 acres in extent and 45 ft. deep, with three miles of quays, on the north side of the existing dock, with a lock 1,000 ft. long and 120 ft. wide and 52 ft. deep below T.H.W., and two large dry docks; an extension to the cold store and cold sorting shed; the construction of a quay and further shed and warehouse accommodation on the south side of the Royal Victoria Dock. Tilbury Docks: an extension of the Docks; three miles of quay; a lock 1,300 ft. long and 130 ft. wide and 55 ft. deep below T.H.W.; two large dry docks, sheds, roads, &c.

Hackney.—Messrs. J. Jarvis & Sons, Ltd., 8, Wormwood-street, E.C. 2, are carrying out works for the Hackney Borough Council, the contract sum for the builders' work amounting to £43,560. The work involved consists of three sections, viz.: Extensions to turbine house and switchrooms, including taking down and re-erection of existing temporary end, reinforced concrete turbine bases and alternator beds, switchroom, and other floors; extensions to boiler house and new mess room, including taking down and refixing existing temporary end (the building had to be erected around the

existing coal bunkers and Telpher track); extensions to pump house, including new reinforced concrete intake works, 20 ft. deep, below the river Lea, and installation of coffer dam and large pipes, ducts from same into pump house and across to turbine house. The work generally consisted of heavy basement excavations to all sections, the erection of concrete walls around steel-framed buildings, rendered in cement internally and externally with the wall linings in turbine house. The works are being carried out to the design and instructions of Mr. L. L. Robinson, electrical engineer to the Hackney Borough Council. Messrs. Dorman, Long & Co., Ltd., carried out the steelwork, and the following sub-contractors were nominated by the Engineer: Messrs. Henry Hope & Sons, Ltd., roof glazing and guards; Messrs. Crittall Manufacturing Co., metal framing to switch and high tension rooms; Messrs. British Luxfer Prism Syndicate, Ltd., insulated floor lights.

NORTH.—Messrs. T. W. Heath, Ltd., 29, Christchurch-street, Chelsea, S.W. 3, have signed the contract for the erection of a depot for the Express Dairy Co., at the corner of Highfield-avenue and Golders Green-road, the architects being Messrs. Herbert O. Ellis & Clarke, of 5, Old Queen-street, S.W. 1.

CHELSEA.—Messrs. Heath have also signed contract for reconstructing a portion of Chelsea Barracks for the Royal Engineers.

TRAFALGAR-ROAD, S.E. 10.—A site has been acquired by the local authority for the erection of new baths and wash-houses.

COVENT GARDEN.—Contracts have been signed, we understand, for the building of a new theatre upon a site in Covent Garden fronting Drury-lane Theatre, the freehold having been acquired for this purpose by Mr. Laurence Cowen, the playwright, who is responsible for the new venture. Mr. Dennis Eadie has secured a lease of the theatre, and will open it to the public on its completion in the autumn of next year. The name of the theatre will be the Crown Theatre—a title which has been chosen because one side of the building will be on Crown-court, Covent-garden. Describing the theatre to a representative of the *Daily Telegraph*, Mr. Cowen, said: "I have contracted for a theatre of moderate size and unique design to be built by November 1 next year on this site, of which I have secured the freehold, and I anticipate that within a few days of that date, Mr. Dennis Eadie, to whom I have granted a lease of the building for twenty-one years, will produce a play within its walls." The architect of the theatre, continues the *Telegraph*, is Mr. Ernest Schaufelburg, an exhibitor at the Royal Academy, and the architect of the Royal Opera House at The Hague and of various Government buildings. He has designed a structure in the Italian Renaissance style, carried out in coloured granite with metal facings. The colour scheme of the interior will be something quite novel in London houses of entertainment, and will be executed in different metals. There will be no gallery in the new theatre. In proportion to its size, the Crown Theatre will have the most commodious stage of any theatre in London. There will be seating capacity to the value of £250 per night. Mr. Cowen has stipulated that the builders are to employ as many ex-Service men as possible.

LEE.—Messrs. Crabb & Son, 38–40, Upper Tulse Hill, S.W.2, are carrying out important interior work at Burnt Ash Congregational Church, Burnt Ash-road, Lee. The work includes the redecoration of the whole of the interior of the church, and is being undertaken under the direction of Mr. H. Sydney Stuart.

ACTON.—Messrs. Ferris Bros., Acton, are carrying out structural alterations to the Acton Hospital. The work includes the construction of two new wards, each containing twelve beds; a children's ward, to contain twelve cots; nurses' bedrooms; bathrooms; two additional private wards; conveniences, &c. The cost of the alterations will be £16,338. The architects are Messrs. E. C. P. Monson, F.R.I.B.A., F.S.I., and H. Monson.

CHARLTON.—Messrs. L. & W. Whitehead, Ltd., Portland Works, Portland-place, Clapham-road, S.W. 8, are carrying out extensive alterations to the Bugle Horn Hotel, Old Village, Charlton. The plans were prepared by Mr. Jefferson, the owner's own architect.

WHITECHAPEL.—Wildermuth Hall, Wentworth-street, Whitechapel, has been converted into a club by the Antill Construction Co., Ltd., 24, Seymour-place, Marble Arch. A large billiard room has been provided and a small dancing hall installed. The architect is Mr. Eustace L. Haynes, 123, Newgate-street, E.C. 1.

JEWIN-STREET.—An important alteration has been made at 46-48, Jewin-street and 4-6, Jewin-crescent, E.C. The buildings contained four staircases, in connection with which it became necessary to adopt fire precautions. Mr. Eustace L. Haynes, the architect, has removed the staircase and installed one central staircase, the arrangement increasing the floor area by one-third. Mr. Haynes also introduced a novel method of keeping the staircase clear of smoke in the event of an outbreak of fire. The total cost of the work was less than £1,000 more than the cost of the work that would have been required to make the old staircases fireproof. Messrs. W. F. Blay, Ltd., were the contractors.

FLEET-STREET.—The demolition of the premises in Fleet-street preparatory to the erection of a branch of Barclays Bank, is now completed. The contractors for the new building are Messrs. Allen Fairhead & Son, Enfield; and the architects are Messrs. C. J. Dawson, Son & Allardyce, of Barking. Mr. H. J. Greenham carried out the demolitions.

OXFORD-STREET.—Messrs. John Mowlem & Co., Ltd., Ebury Bridge-road, Chelsea, S.W. 1, have secured the contract for the rebuilding of the second section of the Western block of the Oxford-street premises of Messrs. Peter Robinson Ltd. No sub-contracts have yet been let.

THE RENT ACT.

A MEETING of the Property Owners' Protection Association was held recently in London, and Mr. Edwin Evans, the President of the Association, made some very pertinent observations on the subject of rent restriction. He was in agreement with the views we have expressed in our columns when he pointed out that the real cause of the shortage of houses was not now so much the war, as the general tendency to discourage and penalise property-holding, and that the only way to secure an adequate supply of housing accommodation for the people was to popularise house ownership, both for occupation and investment. That is a point we think the legislature has consistently turned a blind eye to, and having once tampered with rents to meet a specific case early in the war (the crowding of tenants into particular areas for war work), it has continued to view the subject from the point of view of the tenant alone and continued to pass restrictive legislation dealing with properties of higher and higher value, regardless of the plain fact that if you require the production of any commodity, be it houses or anything else, production must be encouraged, and that restriction placed on the industry must result in limiting the output.

Mr. Evans, as reported in *The Times*, put this proposition in a nutshell when he said the question was, who was to provide houses? If private enterprise was to do it, then it must be on a commercial basis free from Government meddlesomeness and State and municipal competition. Either the Government must take the job on themselves and become the landlords of the people in future, or they must withdraw and leave the old economic law of supply and demand to survive.

We may point out that the nation has object lessons before it to enable it to decide which of the two alternatives is the most desirable in the public interest. What was the result of Government interference with the coal-mines and the railways? The output of the mines was diminished, the railway rates increased and facilities restricted, whilst both classes of undertaking were brought to the verge of bankruptcy. Restrictions having been removed, the coal output is reviving; while since the railways have been restored to private hands facilities have been steadily restored to the public, and the undertakings themselves are in a far more healthy condition.

Mr. Evans pointed out with some force that it was to the national interest that all restrictions should be removed and until this was done the supply of housing accommodation would never become equal to the demand; if the Act were allowed to expire on June 24, 1923, no general harm would result to the community and supply would be encouraged. Towards the conclusion of his address, Mr. Evans is reported as having said that property owners felt strongly that "the limit of restricted rent should be reduced to the 1915 figures—£35 rent or rateable value in London—this covered houses up to yearly rents of £42 and in the case of flats (inclusive rents) up to about £70 per year (standard)."

The speech is shortly reported, and we gather that this latter suggestion was in the nature of compromise, the counsel of perfection being total repeal or rather the lapsing of all restriction. If this be so we have always in these columns recognised the possibility of some such compromise being agreed to for a limited period, but only if it was clearly proved that even such limited restriction was still necessary, for it must be remembered that all the objections which can be urged against restrictions apply with equal force so far as supply is concerned to the houses of low value, and the supply of these houses is very inadequate.

In reply to questions, Mr. Evans is reported as having said the Association would suggest to the Committee on the Rent Act that when an owner required a house for his own occupation or for that of any member of his family, he should be entitled to possession after three months' notice and without any application to the court, and that under the Act no protection at all should be given to sub-tenants.

We are glad the Government decided to have an inquiry made into this question of rent restriction, and that the views of practical men are likely to be laid before the Committee. A study of the Law Reports for the past seven years will show how impracticable the present legislation is, and that property owners are entangled in a mesh of legal subtleties which render it quite impossible for them to deal with their property on any commercial or economic basis, the legislation being framed in such terms that even the Courts find it difficult consistently to interpret the law. A quite simple and ordinary transaction almost inevitably leads to litigation, and litigation which does not terminate in the County Courts but involves appeals until even the House of Lords may have to be consulted.

The British Cast-Iron Research Association.

The Council of the British Cast-Iron Research Association, whose headquarters are at Birmingham, and who work in co-operation with the Department of Scientific and Industrial Research has offered the post of Director of Research to the Association to Dr. Percy Longmuir, of Sheffield, who has accepted the position.

Future Housing Policy.

Speaking at Exeter recently, Sir Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health, said he was convinced that our future housing policy must in the main be based on the encouragement of private enterprise and the restoration of normal conditions. They must get the private builder back again to his proper work of building houses, avoid huge State subventions and any attempt at building nationalisation. What he would like to see most would be a further encouragement of private ownership through the private builder on sound financial conditions. When financial circumstances permitted, local authorities must be encouraged to proceed further with their slum clearance schemes.

TRADE NEWS.

Messrs. James W. Sergeant, Ltd., manufacturers and builders' merchants, have removed to 147, London-road, Kingston-on-Thames.

Messrs. Smith & Wellstood, Ltd., 11, Ludgate Circus, London, E.C. 4, have sent us a copy of their booklet giving information regarding the firm's ranges, stoves, and water heaters for bungalows.

Messrs. John Newman, Ltd., timber and joinery manufacturers, of 72, Whitwell-road, Plaistow, E. 13, have new telephone numbers as follows:—East 4954 and 4955.

Turpin's Parquet-Floor, Joinery & Wood-carving Company, 25, Notting-hill, Gate, W. 11, supplied the oak parquetry dance flooring to the Palm Court and Restaurant, Carlton Hotel, S.W. The firm also supplied the oak parquetry flooring to the Dance Hall, Majestic Theatre, Leeds.

Lowestoft Borough has placed an order with Messrs. William Shepherd & Sons, Ltd., Rochdale, for asphaltic slag for roads, and the graded slag tarmacadam manufactured by this firm. Millom (Cumberland) U.D.C. has also been supplied with this material. One of the exhibits at the Manchester and District Town-Planning Advisory Committee's Exhibition was a group of four photographs of asphaltic slag roads.

Messrs. Ruston & Hornsby, Ltd., the Lincoln engineering firm, have received orders for thirteen dragline excavators from Messrs. S. Pearson & Son, Ltd., the contractors for the large Sudan irrigation scheme. All the machines, some of which are over seventy tons in weight, may be mounted on caterpillar tracks, and are for the purpose of excavating the canals and depositing the excavated material on the banks.

We have just received an advance copy of Parsons' Colour Schemes, an ingenious and simple device to show the effect of the various colours supplied by the firm for interior decorations. The device consists of a box of eighteen cards and a cover into which is inserted a celluloid window showing the design of a room. Any card selected can be slipped under the window, and by changing the slide cards the effect of hundreds of combinations of colours may be seen at a glance, by which it is an easy matter to satisfy the customer's fancy for any particular shade or colour. The device should prove of great assistance to those deciding on the colour scheme of a room. Particulars may be obtained from Messrs. Thomas Parsons & Sons, 315 and 317, Oxford-street, W.1.

On November 15, H.R.H. the Prince of Wales is opening the new William Baker Technical School at Goldings, Herts, for Dr. Barnardo's Homes. A very large mansion, together with cottages and other buildings, has been converted into residential quarters and trade shops, giving accommodation for 300 boys and the staff. The work has been carried out by Messrs. Ekins & Co., Ltd., of Hertford, under the direction of the architect, Mr. W. Ernest Hazell, F.R.I.B.A. On the same day H.R.H. will lay the foundation stone of the new Nurses' Home at the Hertford County Hospital. The Home is an extensive brick structure with concrete floors, designed by Mr. John G. Oatley. This work also is being carried out by Messrs. Ekins & Co., Ltd., who will thus have the unusual honour of a Royal visit to two of their works in the same day.

Society of Estate Clerks of Works.

The autumn meeting was held in Anderton's Hotel, Fleet-street, on Tuesday last week. After the election of the Council and officers, &c., a paper was given on the Enham Village Centre, photographs and drawings to illustrate the work done being exhibited and explained by Mr. S. J. Nock, the clerk of works.

On the following day members and friends were shown over the Houses of Parliament by Mr. T. Wilson, the Clerk of Works, who gave an interesting account, historical and architectural, of all that was seen. Before leaving, a glimpse of the work to the roof of Westminster Hall was obtained.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the rates of wages in the building trade in England and Wales. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
Aberdare	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Accrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Altrincham	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Ashton-under-Lyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Barnsley	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Barrow-in-Furness	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Barry	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Bath	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/3
Bedford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Birkenhead	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/0½
Birmingham	1/8	1/8	1/8	1/8	1/8	1/9	1/8			1/5½
Bishop Auckland	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Blackburn	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Blackpool	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Bolton	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Bournemouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Bradford	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Bridgwater	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½			0/11½
Brighton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Bristol	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Burnley	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Burton-on-Trent	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Bury	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Cambridge	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Cardiff	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Chatham	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Cheltenham	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/0½
Chester	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Chesterfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Colchester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Coventry	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Darlington	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Derby	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Doncaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Dudley	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Durham	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
E. Glam. (Mon. Vall.)	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Eastbourne	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Exeter	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½			1/0½
Folkestone	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Gloucester	1/5	1/5	1/5	1/5	1/5	1/5	1/4			1/0½
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Grays	1/8	1/8	1/8	1/8	1/8	1/8½	1/7			1/3
Grimsby	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Great Yarmouth	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Guildford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Halifax	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Harrogate	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Hartlepools	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Hastings	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Hereford	1/5	1/5	1/5	1/5	1/5	1/5	1/4			1/0½
Huddersfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Hull	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Ipswich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Lancaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Leamington Spa	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Leeds	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Leicester	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Lichfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Lincoln	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Liverpool	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5½
Llanelly	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
London	1/8	1/8	1/8	1/8	1/8	1/8½	1/7			1/3
Loughborough	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Luton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Maidstone	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Manchester	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Mansfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Merthyr Tydfil	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Middlesbrough	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Newcastle-on-Tyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Newport, Mon.	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Northampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Norwich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Nottingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Oakham	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/0½
Oldham	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Oxford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Plymouth	1/6	1/6	1/6	1/6	1/6	1/6	1/5			1/1½
Pontypridd	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/
Portsmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Preston	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Reading	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Rochdale	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Rochester	1/4	1/4	1/4	1/4	1/4	1/4	1/4			1/0
Rugby	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
St. Albans	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
St. Helen's	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Scarborough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Sheffield	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Shrewsbury	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Southampton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Southend-on-Sea	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Southport	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
South Shields	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Stockport	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Stockton-on-Tees	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Stoke-on Trent	1/8	1/8	1/8	1/8	1/8	1/9	1/9			1/3
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4			1/0½
Sunderland	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Swansea	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Swindon	1/5	1/5	1/5	1/5	1/5	1/5	1/4			1/0½
Taunton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Torquay	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Tunbridge Wells	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Wakefield	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Walsall	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
Warrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
West Bromwich	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Wigan	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Windsor	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Wolverhampton	1/8	1/8	1/8	1/8	1/8	1/8	1/8			1/3
Worcester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2
York	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½			1/2

(For rates of wages in the Building Trade in Scotland, see page 640.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

OCTOBER 30.—**Bathpool.**—RENOVATION.—For making renovations, &c., to the Wesleyan Chapel, for the Trustees. Mr. H. R. Venning, architect, Greenbank-lane, Liskeard.

OCTOBER 30.—**Llanishen.**—BUILDING OF WALL, &C.—For the construction of an approach road, supply and fixing of entrance gates, the building of a concrete block enclosure wall, levelling of ground, &c., at the parish burial ground, for the Parish Council. Surveyor to the Council, 7, Pembroke-terrace, Cardiff.

OCTOBER 30.—**Norwich.**—ADDITIONS.—Erection of addition to the laundry at the Norwich Infirmary, for the Board of Guardians. Messrs. Morgan & Buckingham, architects, 1, Upper King-street, Norwich. Deposit 10s. 6d.

✱OCTOBER 30.—**Pendleton.**—ALTERATIONS.—For alterations at the Union Infirmary, Stott-lane, for the Salford Board of Guardians. Messrs. W. T. Gunson & Son, architects, 10, Marsden-street, Manchester.

✱OCTOBER 30.—**Worthing.**—SCHOOL.—Erection of a concrete and timber-built school in Broadwater-road, for the West Sussex C.C. Mr. Haydn P. Roberts, F.R.I.B.A., Westgate, Chichester. Deposit £2 2s.

OCTOBER 31.—**Coventry.**—HOUSE.—Erection of house for medical superintendent at the London-road institution of the Board of Guardians. Mr. T. F. Tickner, architect, 14, Little Park-street, Coventry.

OCTOBER 31.—**Manchester.**—PAINTING.—For painting the Cathedral railing, for the T.C. City Architect, Town Hall, Manchester. Deposit 10s. 6d.

OCTOBER 31.—**Preston.**—PAINTING.—For painting outside of Institution, for the Board of Guardians. Mr. T. H. Bentham, Clerk, Union Offices, Lancaster-road, Preston.

OCTOBER 31.—**Sheffield.**—SUB-STATION, &C.—Erection of transformer sub-station in Brooklands-avenue, Fulwood; (*b*) erection of transformer sub-station in Thornsett-road, Sharrow, for the T.C. Mr. S. E. Fedden, General Manager and Engineer, Commercial street, Sheffield. Deposit £1 1s. each.

OCTOBER 31.—**Shipley.**—PAINTING.—Painting works at the Carnegie Library and Property in Victoria-road, for the U.D.C. Mr. W. H. Dawson, surveyor, Somerset House, Shipley.

NOVEMBER 1.—**Chadwell Heath.**—EXTENSIONS.—For extensions to the Whalebone Council School, for the Essex County Council. The County Architect, Springfield Old Court, Chelmsford. Deposit £1 1s.

NOVEMBER 1.—**London, W.**—ALTERATIONS.—Conversion of certain buildings at 5, Woodfield-road, W.2, into residences for the staff, for the Paddington B.G. Mr. H. Percy Adams, F.R.I.B.A., architect, 9, Knightsbridge, S.W.1. Mr. P. Biddulph Hancock, Clerk to the Guardians, 313–319, Harrow-road, W.9. Deposit £3 3s.

NOVEMBER 1.—**London, W. Kensington.**—FLOORING.—For laying of maple wood block flooring at the Savings Bank, for the Commissioners of H.M. Works.—Contracts Branch, H.M. Office of Works, King Charles-street, S.W. 1.

NOVEMBER 1.—**Maidstone.**—DINING HALL.—Erection of a dining hall (constructed in timber) at the Grammar School for Girls, Sittingbourne-road, Maidstone, for the Governors. Mr. W. N. Robinson, Architect, Sessions House, Maidstone. Deposit £1.

NOVEMBER 1.—**Southampton.**—ALTERATIONS.—Conversion of The Mount, Bishopstoke, into a Tuberculosis Sanatorium, for the Southampton C.C. Mr. A. L. Roberts, County Architect The Castle, Winchester. Deposit £1 1s.

NOVEMBER 1.—**Turnham Green.**—CONVENIENCE.—For the erection of a women's convenience on Turnham Green Common, for Chiswick U.D.C. Mr. Edward Wills, M.I.C.E., Engineer and Surveyor, Town Hall, Chiswick.

NOVEMBER 2.—**Lanchester.**—HOUSES.—Erection of 14 Class "A" two-story houses at Lanchester, for the R.D.C. Mr Thos. E. Taylor, L.R.I.B.A., Union Offices, Lanchester.

NOVEMBER 2.—**Newcastle-on-Tyne.**—FLATS.—Erection of block of nine flats in St. Lawrence-road, for the T.C. Housing Architect, 18, Cloth Market, Newcastle. Deposit £1 1s.

NOVEMBER 3.—**Guildford, Brighton, Chichester.**—WORKS AND REPAIRS.—War Department Contracts for works and repairs. Commanding Royal Engineer, Royal Engineer Office, New-road, Woolwich, S.E. 18.

NOVEMBER 3.—**Taunton.**—COTTAGES.—Erection of three cottages near Blackbrook, Ruishton, for the R.D.C. Mr. E. Sprankling, architect, Taunton.

✱NOVEMBER 3.—**Weybridge.**—HOUSES.—Erection of 10 "A" type houses in Old Palace-gardens, for the U.D.C. Mr. A. D. Jenkins, Clerk to the Council, Council Offices, Weybridge. Deposit £2 2s.

NOVEMBER 4.—**Clones.**—HOUSES.—Erection of five houses, for the U.D.C. Mr. J. Brogan, Clerk, Council House, Clones. Deposit £1 1s.

NOVEMBER 4.—**London, W.**—BUILDING, &C.—Repairs and reinforcement to the stone bridge connecting the east and west blocks abutting Marylebone-road, at the St. Marylebone Workhouse, Northumberland-street, W. 1, for the St. Marylebone Board of Guardians. Messrs. Constantine & Vernon, architects, 82, Mortimer-street, W. 1. Deposit £1.

NOVEMBER 6.—**East Ham, E.6.**—PAINTING.—For painting works at the main drainage works northern outfall, near Beckton, for the L.C.C. Chief Engineer of the Council, Old County Hall, Spring Gardens, S.W.1. Deposit £1.

NOVEMBER 6.—**Exeter.**—ALTERATIONS.—Adaptation of portion of the Higher Market, Queen-street, into an Assembly Hall, for the T.C. City Architect, 2, Southernha West, Exeter. Deposit £2.

NOVEMBER 6.—**Maesteg.**—HOUSES.—For complete erection of 20 houses on the Park site, Maesteg, on a fixed price basis, for the U.D.C. Mr. S. J. Harpur, M.S.A., Talbot-street, Maesteg. Deposit £2 2s.

NOVEMBER 6.—**West Ham.**—PAINTING, &C.—For painting works and construction of a light steel roof over screening chamber at the Abbey Mills pumping station, for the L.C.C. Chief Engineer of the Council, Old County Hall, Spring Gardens, S.W.1. Deposit £1.

NOVEMBER 7.—**Chingford.**—COTTAGE.—Cottage at their Refuse Disposal Works, for the U.D.C. Mr. Leonard C. Bowen, Council Offices, Chingford, E.4.

NOVEMBER 7.—**Rochdale.**—PAINTING.—Painter's work at (*a*) Free Public Library, (*b*) Castleton Branch Library, for the T.C. Borough Surveyor, Town Hall, Rochdale.

NOVEMBER 7.—**Wrexham.**—W.D. CONTRACT FOR REPAIRS AND MATERIALS.—Artificer's Works Contract from December 1, 1922, for Wrexham Division. Lt.-Col. R. S. McClintock, R.E., Commanding Royal Engineers, Welsh Area, R.E. Office, 3, Belmont, Shrewsbury.

✱NOVEMBER 8.—**Abbey Wood, S.E.2.**—PAINTING, &C.—For cleaning and painting works and repairs at Goldie Leigh Homes, for the Metropolitan Asylums Board. Office of the Board, Embankment, E.C.4. Deposit £1.

✱NOVEMBER 8.—**Darwen, Lancs.**—POST OFFICE.—Erection of a new P.O. for the Commissioners of H.M. Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit £1 1s.

NOVEMBER 8.—**Hendon, N.W. 9.**—ALTERATIONS.—For alterations to Nurses' Home, to provide additional bedrooms, &c., at Colindale Hospital, Colindale-avenue, for the Metropolitan Asylums Board. Office of the Board, Embankment, E.C. 4. Deposit £1.

NOVEMBER 9.—**Rowley Regis.**—HOUSES.—Erection of 12 houses at Rowley Regis and 16houses at Tividale, for the U.D.C. Mr. Daniel Wright, Clerk, Rowley Regis.

NOVEMBER 11.—**Netherthong.**—MONUMENT.—Erection of a monument in Bradford stone, at a cost of not more than £150. Mr. Thomas Dyson, Moorgate, Netherthong, Thongsbridge.

NOVEMBER 13.—**Pantsg.**—SWIMMING BATH.—Construction of open-air swimming bath at Griffithstown, for the U.D.C. Surveyor, Pontymoel.

✱NOVEMBER 14.—**South Croydon.**—CONVENIENCE.—For the construction of an underground convenience for women, and sundry work of alteration to men's convenience in roadway adjoining the Swan and Sugar Loaf Hotel, for the C.B. The Borough Engineer, Town Hall, Croydon. Deposit £1 1s.

NOVEMBER 14.—**Warsop, Notts.**—WORKMEN'S HOUSES.—Erection of 100 houses, near Welbeck Colliery, for Messrs. New Hucknall Colliery Co., Ltd. Head Office, nr. Mansfield. Deposit £5 5s.

NOVEMBER 20.—**Poplar.**—ENGINE HOUSE, &C.—For the construction of an engine house in brick and concrete, with slate roof and foundations for engines, pumps, and auxiliary machinery, also construction of supply, suction and delivery culverts, &c., for the L.C.C. Chief Engineer of the Council, Old County Hall, Spring Gardens, S.W.1. Deposit £5.

✱NOVEMBER 20.—**Yeovil.**—HOUSES.—Erection of 20 non-parlour houses in Goldcroft, for the B.C. Messrs. Petter & Warren, FF.R.I.B.A., "Old Sarum" House, Yeovil. Deposit £2 2s.

NOVEMBER 30.—**Barcelona.**—EXHIBITION BUILDINGS.—Construction of the Grand Palace of Nations in connection with the Barcelona Exhibition. Oficinas de la Exposicion, Barcelona. Tenders in French or Spanish to be delivered by hand. Copy of specification at Department of Overseas Trade, 35, Old Queen-street, S.W.

✱DECEMBER 15.—**Hertford.**—Provision and erection of a sectional stand and other accommodation to seat 400 people. Mr. H. J. Gray, "Salisbury Arms" Hotel, Hertford.

NO DATE.—**Dumbarton.**—HOUSES.—Erection of nine blocks of 24 houses at Old Kilpatrick, for the T.C. Mr. Joseph Weekes, architect, 88, College-street, Dumbarton. Deposit £1 1s.

NO DATE.—**Falkirk.**—HOUSES.—Erection of houses, for the T.C. Mr. Wm. Gibson, Director of Housing, Arnotdale, Falkirk.

NO DATE.—**Glamorganshire.**—CONCRETE POSTS, &C.—For supplying and fixing approximately 1,436 yds. of 6-wire reinforced concrete post and wire fencing at Graigwen, Penyrheol, and Caerphilly, for the Glamorganshire Agricultural Committee. The County Land Agent, 30, Park-place, Cardiff.

NO DATE.—**Kilmarnock.**—HOUSES.—Erection of 30 houses, for the T.C. Mr. Robert Blackwood, Burgh Surveyor, Kilmarnock.

FURNITURE, MATERIALS, etc.

OCTOBER 30.—**Merthyr Tydfil.**—HARDWARE.—The Ladies' Committee of the Merthyr General Hospital invites tenders for supply of hardware. Mrs. Johanna Edwards, Secretary, General Hospital, Merthyr Tydfil.

OCTOBER 31.—**London.**—POLES.—Supply of Swedish, Norwegian, Finnish or Baltic red fir and home-grown larch or Scots fir telegraph poles, to be felled during the winter of 1922–23. Controller, Post Office Stores Department, 17–19, Bedford-street, W.C.2.

NOVEMBER 1.—**New Romney.**—FENCING.—Supply of oak fencing and rock. Mr. Walter Lamacraft, Town Clerk, Town Hall, New Romney.

NOVEMBER 2.—**Gateshead.**—RAILWAY STORES.—Supply of all kinds of stores to the North-Eastern Railway Co. Mr. E. H.Clark, Stores Superintendent, Gateshead.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Bricklayers' Labourers.	Plasterers'
Aberdeen	1/7	1/10½	1/7	1/7½	1/8	1/9	1/7	1/2 to 1/4	
Airdrie	1/8	1/8	1/8	1/8	1/8	1/8	—	1/3	
Alexandria	1/8	1/8	1/8	1/8	1/8	1/8	—	1/2	
Arbroath	1/7	1/7	1/7	1/7	1/7	1/7	1/8	1/1	
Ayr	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Bathgate	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/2	
Blairgowrie	1/7	—	1/7	1/7	1/7	1/7	1/7	—	
Bo'ness	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/2	
Coatbridge	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Dumbarton	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Dumfries	1/6	1/6	1/6	1/6	1/6	1/8	1/8	1/2	1/2½ 1/3½
Dundee	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Dunfermline	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/2	
Edinburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Falkirk	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	—	1/1½	
Galashiels	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/1½	
Glasgow	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Greenock	1/8	1/3	1/8	1/8	1/8	1/8	1/9	1/1 to 1/3	
Hamilton	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Hawick	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Helensburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Inverness	1/6½	—	1/6	1/7	1/6½	1/7	1/6	10d. to 1/2	
Kilmarnock	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Kirkcaldy	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/2	
Kirkwall	1/5	1/5	1/4	1/7	1/5	1/5	1/4	1/2	
Lanark	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Leith	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Motherwell	1/8	1/8	1/8	1/8	1/8	1/8	—	1/3	
Perth	1/8	1/8	1/8	1/8	1/8	1/8	1/7	1/2	
Stirling	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Stirlingshire (Eastern District)	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	
Wishaw	1/8	1/8	1/8	1/8	1/8	1/8	1/9	1/3	

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 639.

* NOVEMBER 7.—**Manchester.**—BATHS.—Supply of 34 porcelain wash-baths for the Osborne-street baths, for the T.C. City Architect, Town Hall, Manchester. Deposit 10s. 6d.

NOVEMBER 7.—**Poplar.**—SANITARY PIPES, &C.—Supply to the Poplar and Stepney Sick Asylum District of sanitary pipes and fittings. Mr. Sydney G. Wright, Clerk, St. Andrew's Hospital, Devon's-road, Bow, E.3.

NOVEMBER 10.—**Chichester.**—ROAD MATERIALS.—Supply of broken granite, picked surface flints, tarred macadam, &c., to the West Sussex C.C. Mr. H. W. Bowen, County Surveyor, Southgate House, Chichester.

NOVEMBER 10.—**Chichester.**—TAR.—Supply of about 200,000 gallons of tar to the West Sussex C.C. Mr. H. W. Bowen, County Surveyor, Southgate House, Chichester.

NOVEMBER 10.—**Port Talbot.**—FURNITURE.—Supply of from 200 to 400 light iron folding chairs, to the T.C. Mr. Moses Thomas, Town Clerk, Port Talbot.

* NOVEMBER 11.—**Bristol.**—STORES, &C.—For the supply of various stores during six months ending June 30, 1923, for the Sanitary and Improvement Committee of Bristol Corporation. The City Engineer, 63, Queen-square, Bristol. Deposit 10s.

NOVEMBER 15.—**Egypt.**—STORES.—Supply of stores to the Egyptian Postal Administration at Alexandria, including hardware, paints, &c. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

NOVEMBER 17.—**Derby.**—SCHOOL FURNITURE.—Supply of school furniture to the Derbyshire E.C. Mr. Geo. H. Widdows, F.R.I.B.A., Architect, County Offices, St. Mary's Gate, Derby.

JANUARY 31.—**Siam.**—RAILWAY STORES.—Supply to the Department of State Railways, Siam, of railway store materials. Messrs. C. P. Sandberg, 40, Grosvenor-gardens, S.W.1. Charge £2 12s.

ENGINEERING, IRON AND STEEL.

OCTOBER 30.—**Greenhill.**—FOOTBRIDGE.—Erection of a footbridge over the railway at Greenhill, for the Caledonian Railway Co. Engineer, Buchanan-street Station, Glasgow. Deposit £2 2s.

OCTOBER 30.—**Hull.**—BRIDGE.—For a railway bridge in connection with Chanterlands-avenue extension, for the T.C. Mr. F. W. Bricknell, City Engineer, Guildhall, Hull. Deposit £1.

OCTOBER 31.—**Guyhirn.**—BRIDGE.—Construction of ferro-concrete bridge on the Hennebique system, over the River Meme, for the Isle of Ely C.C. Mr. H. F. Simpson, County Surveyor, Lynn-road, Wisbech.

OCTOBER 31.—**Hythe.**—SEA DEFENCES.—Driving of six piles and fixing the necessary bracing on the Twiss Groyne, for the T.C. Mr. J. Singleton-Green, Deputy Borough Surveyor, Hythe.

OCTOBER 31.—**London.**—TYRES.—Steel tyres. Director-General, India Store Department, 12, Belvedere-road, S.E.

OCTOBER 31.—**Scunthorpe.**—GAS MAINS.—Supply and jointing of about 600 ft. of 20 in. cast-iron gas mains and specials, for the new Gas Works. Mr. J. F. Simpson, Manager, Gas Works, Scunthorpe.

NOVEMBER 1.—**Failsworth.**—BRIDGE.—Construction of a bridge to carry the Royton-to-Failsworth arterial road over the L. & N.W. Railway at Failsworth, for the U.D.C. Messrs. Charles J. Lomax & Son, civil engineers, 37, Cross-street, Manchester. Deposit £3 3s.

NOVEMBER 1.—**London.**—GIRDER BRIDGES.—Supply to the East Indian Railway Co. of girder bridges. Mr G. E. Lillie, Secretary, 73-76, King William-street E.C. 4. Charge £1 1s.

NOVEMBER 1.—**Rochdale.**—LIFT.—Supply of electric lift at the hospital of the Board of Guardians. Mr. R. A. Leach, Clerk, Union Offices, Rochdale.

NOVEMBER 2.—**York.**—TELEGRAPH APPARATUS, &C.—Supply to the North-Eastern Railway of (1) Telegraph apparatus; (2) telegraph wire and line stores. Mr. C. H. Ellison, Company's Telegraph Superintendent, York.

NOVEMBER 3.—**London.**—MATERIALS.—Supply to the South Indian Railway Company of (1) mild steel bars, sections, &c., (2) Yorkshire iron, (3) wrought iron, (4) spring steel, (5) bolts, nuts, and rivets. Mr. A. Muirhead, Managing Director, 91, Petty France, S.W.1. Charge 10s. each.

NOVEMBER 3.—**London.**—RAILWAY MATERIAL.—Supply to the High Commissioner for India of (*a*) buffers, (*b*) boiler tubes, (*c*) galvanised corrugated mild steel sheets. Director-General, India Store Department, 12, Belvedere-road, S.E.

NOVEMBER 4.—**Wicklow.**—ELECTRICAL PLANT.—Supply of electrical plant, house services, &c., to the U.D.C. Messrs. J. P. Tierney & Co., 44, Kildare-street, Dublin. Deposit £2 2s.

NOVEMBER 8.—**London.**—ENGINES.—Supply to the Bombay, Baroda and Central India Railway Co. of locomotive tank engines. Mr. S. G. S. Young, Secretary, 91, Petty France, Westminster, S.W. 1. Charge £1.

NOVEMBER 8.—**London.**—OVERBRIDGE, &C.—Supply to the Bombay, Baroda and Central India Railway Company of (1) Overbridge; (2) steel material for construction of wagons, &c.; (3) wheels and axles. Mr. S. G. S. Young, Secretary, The White Mansion, 91, Petty France, S.W. 1. Charges, £1 for (1) and (2), and 10s. for (3).

NOVEMBER 10.—**Leeds.**—CASTINGS.—Supply of iron castings to the Electricity Department of the T.C. Mr. C. Nelson Hefford, Manager, 1, Whitehall-road, Leeds.

NOVEMBER 14.—**Edinburgh.**—TRAMCAR BODIES.—Supply of 56 top-covered car bodies, for the Tramway Dept. Tramways Engineer, Edinburgh.

NOVEMBER 15.—**Port Elizabeth.**—SEWAGE LIFTING PLANT.—(*a*) Supply and erection at proposed pumping station of suitable pumping machinery, cast-iron rising main, foundations for plant, &c.; (*b*) an alternative tender for the supply only of machinery and pipes, for the Municipal Council. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

NOVEMBER 18.—**Johannesburg.**—TUBES.—H.M. Senior Trade Commissioner in South Africa reports that the Municipal Council of Johannesburg invites tenders for the supply and delivery at President-street Store of 128 large and 128 small solid drawn steel superheater tubes, 1¼ in. outside diameter, No. 9 s.w.g. for 17,000 lbs. Babcock & Wilcox boilers, in accordance with drawing No. 1511, dated September 12, 1922. (Contract 977.) Sealed tenders on the proper form, and accompanied by a deposit of 10 per cent. of the total amount of the tender, to be sent to the Town Clerk, Municipal Offices, Johannesburg. The conditions of tender, &c., can be inspected by United Kingdom firms interested on application at the Department of Overseas Trade (Room 47), 35, Old Queen-street, Westminster, London, S.W.1.

NOVEMBER 21.—**Dublin.**—SLUDGE-RAISING MACHINERY.—Designs and tenders for duplicate electrically-driven units to raise about 78,000 gallons per hour of sludge through a lift of 34 ft., for the T.C. Mr. J. S. Alford, 11, Victoria-street, Westminster, S.W.1. Deposit £2 2s.

NOVEMBER 28.—**New Zealand.**—CRANE.—Supply to the Auckland Harbour Board, New Zealand, of one 1-ton fixed pedestal crane, for King's Wharf. Messrs. W. and A. McArthur, Ltd., 18-19, Silk-street, Cripplegate, E.C.2. Deposit £1 1s.

NOVEMBER 28.—**New Zealand.**—PLATE GIRDERS.—Supply of plate girders to the Public Works Department, for the Orepuki-Waiaun Railway. Department of Overseas Trade, 35, Old Queen-street, S.W.

DECEMBER 5.—**New Zealand.**—TELEPHONES.—For telephone system for the Mangahoo Power House. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

DECEMBER 12.—**New Zealand.**—PLATE GIRDERS.—Supply to the Public Works Department of plate girders, for the Lawrence-Roxburgh and the Tanestue Railways. Department of Overseas Trade, 35, Old Queen-street, S.W.

DECEMBER 18.—**Victoria.**—COAL HANDLING PLANT.—For coal handling plant for the Morwell Power scheme, for the Victorian State Electricity Commission. Agent-General for Victoria, Melbourne-place, Strand, W.C.2. Deposit £2 2s.

DECEMBER 31.—**Argentina.**—RAILWAY.—Construction and equipment of 650 and 185 kilometres of one metre gauge railway as well as for the financing of the same, for the State Railways of the Province of Buenos Aires (Argentine Republic). Argentine Legation, Aldford House, 26, Park-lane, W.1.

JANUARY 31.—**Australia.**—ELECTRICAL PLANT.—Supply of steam turbine and other plant to the Morwell Power Station, for the State Electricity Commission. Agent-General for Victoria, Melbourne-place, Strand, W.C. Deposit £2 2s.

FEBRUARY 1.—**Auckland.**—ELECTRIC CRANES.—For the supply of twelve five-ton (alternatively three-ton) semi-portal balanced jib electric quay cranes, four five-ton (alternatively three-ton) balanced jib electric roof cranes, and six one-ton electric monorail cranes, for Auckland Harbour Board. Messrs. W. & A. McArthur, Ltd., 18-19, Silk-street, Cripplegate, London, E.C.2. Deposit £2 2s.

NO DATE.—**Selby.**—BRIDGE.—Erection of a girder or ferro-concrete bridge, for the U.D.C. Mr. Bruce Gray, Council Offices, Selby.

ROAD, SANITARY, AND WATER WORKS.

OCTOBER 30.—**Brynmawr.**—SEWERAGE WORKS.—Construction of sewage purification works and about 1,300 lin. yards of outfall sewer by local unemployed labour, for the U.D.C. Mr. W. J. Lomax, Engineer, 11, Fold-street, Bolton. Deposit £5.

OCTOBER 30.—**Caerphilly.**—SEWER.—Construction of 1,100 lin. yards of 9 in. and 6 in. sewer at Ystrad Mynach and Caerphilly, for the U.D.C. Mr. T. H. Richards, Surveyor, Caerphilly. Deposit £1 1s.

OCTOBER 30.—**Llanishen.**—BURIAL-GROUND.—Construction of an approach road, supply and fixing of entrance gates, the building of a concrete block enclosure wall, levelling of ground, &c., for the Parish Council. Surveyor, 7, Pembroke-terrace, Cardiff.

OCTOBER 30.—**Newark.**—SEWAGE DISPOSAL.—For sewage disposal works, for the T.C. Messrs. W. H. Radford & Son, engineers, Albion Chambers, King-street, Nottingham. Deposit £3 3s.

OCTOBER 30.—**Stoke-on-Trent.**—SANITARY.—Conversion of 202 privy cesspools, for the T.C. Health Department, Stoke-on-Trent.

OCTOBER 31.—**Doncaster.**—SEWAGE SCHEME.—Construction of storm overflow chambers, screening chambers and screen house, detritus tanks, new pumping station substructure, storm water tanks, sludge lagoons, culverts, river retaining walls, 21 in. C.I. rising main, &c., for the T.C. Mr. F. Oscar Kirby, Borough Engineer, 2, Priory-place, Doncaster. Deposit £5 5s.

OCTOBER 31.—**Doncaster.**—SEWAGE WORKS.—Settling tanks, percolating filters, and supplying media, humus tanks, sludge lagoons, effluent channels and sewer, sludge mains, rising mains, roads, &c., for the T.C. Mr. F. Oscar Kirby, Borough Engineer, 2, Priory-place, Doncaster. Deposit £5 5s.

OCTOBER 31.—**Erith.**—ROADS.—For street and sewerage works, for the U.D.C. Surveyor, Bexley-road, Erith. Deposit £1.

OCTOBER 31.—**Filey.**—CULVERT.—Construction of about 45 lin. yards of culvert, for the U.D.C. Mr. Basil H. Noble, Surveyor, Council Offices, Filey.

NOVEMBER 2.—**Glasgow.**—SEWER.—Construction of an 18-in. pipe sewer in the Molindinar Burn, for the T.C. Office of Public Works, 64, Cochrane-street, Glasgow.

NOVEMBER 3.—**Abarsychan.**—ROAD WORKS.—For the providing and fixing curb and channel, making up of footpaths, and top metalling and rolling of roads, at the Penygam housing scheme site, Pontypool, for the U.D.C. Mr. O. P. Bevan, Architect to the Council, Station-road, Bargoed; and at the Works Office, Penygam.

NOVEMBER 6.—**Bolton-upon-Dearne.**—RECREATION GROUND.—Repairing recreation ground, bowling greens, tennis courts, &c., at Goldthorpe, for the Bolton-upon-Dearne Miners' Welfare Scheme. Messrs. Garside & Pennington, architects, Ropergate, Pontefract.

NOVEMBER 6.—**Skipton.**—ROADS, &C.—Works in connection with the Keighley-road widening and covering of the Skibeden Beck, for the U.D.C. Mr. A. E. W. Aldridge, Surveyor, Town Hall, Skipton. Deposit £2.

NOVEMBER 6.—**Stanley.**—ROADS.—Private street works in Annie-street, Queen-street (part), Back Annie-street, and Back Charles-street, for the U.D.C. Messrs. Massie & Holdsworth, Tetley House, Kirkgate, Wakefield. Deposit £2 2s.

NOVEMBER 6.—**Sunbury-on-Thames.**—SEWER.—Construction of about 350 yards of 8 in. glazed stoneware pipe sewer, for the U.D.C. Mr. Harold F. Coales, Surveyor, Council Offices, Sunbury-on-Thames.

NOVEMBER 7.—**Chingford.**—ROADS.—Making-up Mount-avenue and Templeton-avenue, for the U.D.C. Mr. J. T. Griffin, Surveyor, Council Offices, Chingford. Deposit £2 2s.

NOVEMBER 7.—**Lambeth.**—ROADS.—Laying of bituminous materials in Lothian-road, Royal-street, and Vassall-road, for the B.C. Mr. H. E. Anderson, Borough Engineer, Town Hall, Brixton-hill, S.W.

NOVEMBER 11.—**Chester.**—ROADS.—Reconstruction with granite setts on reinforced concrete foundations of four streets and the reconstruction with natural rock asphalte on reinforced concrete foundations of City-road, for the T.C. Mr. Charles Greenwood, City Engineer, Town Hall.

* NOVEMBER 15.—**Rochester, Kent.**—SANITARY WORK.—Provision of additional sanitary accommodation at the Grammar School for Girls, Rochester, for the Kent Education Committee. Mr. W. H. Robinson, F.S.Arc., Sessions House, Maidstone. Deposit £1.

NOVEMBER 30.—**Skegness.**—DRAINAGE.—For surface water drainage works in (1) St. Andrew's-drive, (2) Muirfield-drive, for the U.D.C. Mr. R. H. Jenkins, Surveyor, Council Offices, Skegness.

JANUARY 8.—**Argentine.**—SEWERAGE SYSTEM.—Construction of a sewerage system at Mendoza, for the Department of Sanitary Works, Argentine. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

Competitions.

DECEMBER 1.—**Ryde, I.W.**—PAVILION.—The T.C invite designs for a pavilion to be erected in the Eastern Esplanade Gardens, Ryde. Premiums, £50 (or £300 to carry out the work), £30, £20. Mr. B. F. Holmes, M.Inst.M.&Cy.E., Borough Surveyor Ryde.

(*See Competition News, page* 610.)

Auction Sales, Tenders, etc.

* OCTOBER 31.—**Nottingham.**—Mr. Terrey Pyatt, F.A.I., will sell about 20,000 cubic feet of timber at the Great Central Yard, Wilford-road. Auctioneer, 26 Lister-gate, Nottingham.

NOVEMBER 1.—**Westminster.**—Messrs. Veryard & Yates, F.A.I., will sell, without reserve, at Tufton-street, at 1.30, hut-sections, timber and building materials. Auctioneers, 365, Norwood-road, S.E.27.

* NOVEMBER 8.—**Tottenham.**—Messrs. Joseph Hibbard & Sons will sell, without reserve, upon the premises Downhill Farm, Downhill Park-road, West Green-road, builders' stock and timber, at 1 o'clock. Auctioneers, 15, Newington-green, Islington, N.16.

Public Appointments.

* OCTOBER 31.—**Gateshead.**—Temporary Assistant Costing Clerk required by the C.B. in connection with their Housing Scheme. Mr. N. P. Pattinson, Borough Surveyor, Town Hall, Gateshead.

* NOVEMBER 6.—**Wembley.**—Temporary Clerk of Works required by the U.D.C. for road improvement works. Mr. Cecil R. W. Chapman, Engineer and Surveyor to the Council, Council Offices, Wembley, Middlesex.

* NOVEMBER 7.—**Croydon.**—Messrs. Hy. Butcher & Co. will sell, at Waddon Works, plant, machinery, rolling stock, &c. Auctioneers, 63 & 64, Chancery-lane, London, W.C. 2.

* NOVEMBER 7.—**London, E.C.**—Messrs. Fuller, Horsey, Sons & Cassell will sell, at the Merchants' Hall, Baltic Exchange, St. Mary Axe, builders' and contractors' plant. Auctioneers: 11, Billiter-square, E.C. 3.

* NOVEMBER 10.—**Ipswich.**—Messrs. Garrod, Turner & Son will sell concrete building plant, on the Race-course Site, Nacton-road. Auctioneers, 1, Old Butter-market, Ipswich.

NO DATE.—**Llanelly.**—ARCHITECT.—The Carmarthenshire T.F. Association require the services of an Architect to draw plans and supervise the erection of a new drill hall at Llanelly. The Secretary, The Barracks, Carmarthen.

The Electrical Contractors' Association.

The Electrical Contractors' Association (Inc.), the N.E.C.T.A., Ltd., the National Federated Electrical Association, the London Electrical Masters' Association, the Joint Committee of Specialists' Association, and the National Joint Industrial Council for the Electrical Contracting Industry, have removed to the Institution of Electrical Engineers' Building, Savoy-street, Victoria-embankment, W.C.2; (telephone, Regent 488; telegraphic address, "Nafecta, Phone, London"). Mr. Leonard G. Tate is Secretary of the Associations.

PROPOSED NEW BUILDINGS & OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERAYRON.—Mrs. E. M. Evans, Central Hotel, Llanon, has notified the U.D.C. that she intends walling her property.

ABERDEEN.—Plans passed: Alterations on store at Newbridge, Hardgate, for the Trustees of the late William Sim, per Mr. A. H. L. Mackinnon, architect; motor repair shop and garage on the north side of Union Glen, for the Trustees of the late William Sim, per Mr. A. H. L. Mackinnon, architect; bakehouse at the rear of 41, Spital, for Mr. Alexander M. Robertson, baker, per Mr. George Watt, architect; extension of shed at Bannermill, for Mitchell & Muil, Ltd., per Messrs. Wilson & Walker, architects (amended plan); store at Froghall-terrace, for the Aberdeen Jute Co., Ltd., per Messrs. Jenkins & Marr, architects; office at 394, Great Northern-road, for Mr. Alexander Milton, motor hirer; outhouses at 402, Clifton-road, for Mr. Charles D. Brown, cabinet maker; alterations at 10 and 12, Great Western-road, for Mr. James L. Archibald, cabinet maker; covered gangway at Thistle-place, for Mr. George Cumming, motor cycle agent, per Mr. George Watt, architect; extension of garage at the rear of No. 30, Balmoral-place, for Mr. Charles Leeds, dairyman.

ANDOVER.—Plans passed by T.C.:—Storehouse, Millway-road, for Mr. McDougall; bungalow and cottages, Charlton-road, for Mr. A. East.

ASTON CLINTON.—The justices have passed plans for structural alterations at the "Bell" Hotel, for Mr. John H. Glading.

BEDWELLTY.—The Ministry of Health has sanctioned the Council's application for permit to erect a further twelve houses, and tenders will be invited. An interview has been arranged with the Ministry with regard to a number of schemes under consideration by which local unemployed could be absorbed.

BIRMINGHAM.—Negotiations have been opened by Mr. L. H. Collier (Messrs. Collier & Keyte, architects), for the purchase of a large area of land at Billesley Common from the Birmingham Estates Committee. Behind these negotiations is a scheme for the erection of 600 houses by a company to be formed by a number of public men interested in housing.

BLACKROD.—The U.D.C. has passed a plan for a store at Blackrod Mill.

BRIDGEND.—It was decided by the U.D.C., after report by the Electrical Engineer, to proceed with erection and equipment of sub-station at Litchord.

BRYNMAWR.—The U.D.C. has received the Surveyor's report that he estimated the cost of Blaenavon Bridge widening at £3,500. It was decided to apply for grant towards cost from the Railway Company and the Ministry of Transport.

CARMARTHENSHIRE.—The County T.F. Association is to erect a new drill hall at Llanelly, and is inviting the services of a planning and supervising architect.

CHATHAM.—Bungalows, Victoria-road, Walderslade, Mr. J. Cattle; billiard-room, Ivy Leaf Club, High-street, Watts' Charity; store, rear of Railway-street, Saccone & Speed, Ltd.; bungalow, Maidstone-road, Mr. W. J. Sayer; bungalow, Hook-road, Mr. R. O. Baker; semi-detached bungalows, Ewart-road, Mr. E. J. Knowler; institute, Wyles-road, the Chatham Suburban Social Club and Institute, Ltd.; recreation hall, R.N. Sailors' Home, rear of Town Hall.

CHORLEY.—Plans passed by R.D.C.: House, Low Mill, Wheelton (Calico Printers' Association); extension of weaving shed, Ulnes Walton (Jubilee Mills Co.); store, Coppull (Mr. Holland); bungalow, Chapel-lane, Hoghton (Mr. Paul King); house, Euxton (Mr. Wm. Hamer); bungalow, Heapey (Gorse Hall Construction Co.).

DORKING.—The Surveyor to the U.D.C. has prepared plans for conveniences in High-street, estimated to cost £1,300.

DRIFFIELD.—The R.D.C. has passed plans for the erection of a house at Cranswick, of a bungalow at Kilham, and for alterations to a house in Carr-lane, Nafferton.

DUNDEE.—Mr. James Thomson, the City Architect, has been instructed to draw up sketch plans for a branch library at Broughty Ferry.

FLEETWOOD.—Plans passed by U.D.C.: Alterations and additions, Albert-square, for London Joint City & Midland Bank, Ltd.; two shop fronts, 118 and 120, Poulton-road, for Messrs. Brown & Brough; bungalow, Fleetwood, for Mr. W. Lancaster.

FLINT.—Plan passed by T.C.: Surgery and baths at Aber Works, for Messrs Courtaulds.

GAINSBOROUGH.—The U.D.C. has decided to proceed with the Ropery-road extension scheme, towards which the Ministry of Transport will contribute 50 per cent.

GLAMORGANSHIRE.—A convention of Glamorgan and Monmouth local authorities is to be held shortly with the view of formulating joint schemes for arterial road construction. The Ministry of Health, according to a recent report by the Cardiff City Engineer, would favourably regard the scheme and would send representatives to the gathering. Such a joint authority already is in operation in the Manchester district.

GLASGOW.—The second instalment of the scheme agreed upon by the T.C. for the clearance of slum properties was sanctioned at the last sitting of the Dean of Guild Court. The principal linnings granted were: Vestry of St. Margaret's Episcopal Church, Newlands, to make additions (chancel, sacristy, &c.) to church in Kilmarnock-road and Newlands-road; Mackie & Co. (distillers), Ltd., 217, West George-street, to make alterations to distillery at Mackie-street, Port-Dundas; Glasgow Tramways Department, to erect a tramway shelter in Alexandra-parade at Craigpark; Glasgow Corporation Housing Department, to erect 102 tenement dwelling houses of two and three apartments, &c., at Wolseley street and Logan-street, Oatlands. The Governors of the Houldsworth Homœopathic Hospital propose to extend the institution at an estimated cost of £20,000, of which £3,000 has been raised already.

HAVERFORDWEST.—The Trustees of the Perrott Charities have decided to grant £120 10s. to the Town Council toward expense of reconstructing buildings and laying concrete pavement in Coity-road, toward which the Ministry of Health will also contribute £228. The Trustees instructed the Borough Surveyor to invite tenders for construction of concrete and chipping pavement toward the hospital, the cost of which they will bear.

HEMEL HEMPSTEAD.—Plans passed by T.C.:—Bungalow, Cowper-road, for Mr. Gulliver; conversion of building to house, Bath-street, for Mr. Vercoe.

HINCKLEY.—Plans passed by U.D.C.:—Greenhouse and wall, Leicester-road, for Mr. H. J. Simmons; dye house, Regent-street, for Messrs. H. J. Simmons & Co.

HOVE.—Plans passed by T.C.: Mr. H. Elliott, for Capt. Leeney, conversion into flats, 83, St. Aubyns; Mr. E. E. Brown, bungalow and pair semi-detached bungalows, Marine-avenue, West-end; Messrs. Denman & Son, for Mr. A. A. Jones, 6 houses, Rochester gardens; Mr. A. W. Scammell, for Mr. F. Laws, extension, 5, Boundary-road; Mr. B. James, for Mr. A. Chadwell; back offices and motor garages, Vallance-gardens; Messrs. E. Gladman & Son, pair detached houses and garages, Boundary-road; Mr. E. Wallis Long, for Mr. S. V. Clirehugh, alterations, 26, Palmeira-avenue; Mr. F. C. Axtell, for Mrs. J. G. Masten, bathroom, 26, Brunswick-square; Mr. J. Soper, for Mrs Williams, conversion of stables into residence, 77, Pembroke-crescent; Mr. A. W. Rammage, for Capt. S. P. Stocks, bungalow, Portland Villas; Messrs. T. Garrett & Son, for Mr. C. D. Malby, house, Titian-road; Messrs. Warren & Son, for Mr. E. G. Eade, house, Nizell's-avenue; Mr. J. J. Taylor, for Mr. J. Fleming, detached house and garage, Hove-street; Mr. C. B. Carvill, for Mr. C. S. Burton, pair semi-detached houses, Dorothy-road; Mr. B. James, for Mr. W. Colwell, garage and stores, Arthur-street; Messrs. Phibbs and Tanner, for Mr. W. B. Pinniger, detached house, Montefiore-road; Mr. W. H. Overton, house, Palmeira-avenue; Messrs. J. Parsons & Sons, for Rev. A. R. Read, new rectory, New Church-road; Mr. A. W. Venner, for Mr. L. Venner, house, Nizell's-avenue; Messrs. W. Willett, Ltd., for Mr. H. R. S. Graves, alterations, 12, Wilbury-grove; Messrs. Denman & Son, for Mr. H. C. Lawrence, alterations, 27, Adelaide-crescent; Mr. F. C. Axtell, for Mrs. Gerald Hay, addition, 48, Brunswick-place.

HUNSTANTON.—Plans passed by U.D.C.: Two cottages, Hill-street, for Mr. F. W. Shanks; additions, "Flaxwell," for Mr. J. T. Evison.

HYTHE.—Plans passed by T.C.: Alteration to bungalow at Lympne Hill, for Mrs. Vine; building in Blackhouse Hill, for Mr. C. R. Thomas; alteration to Bank buildings, for Lloyds Bank, Ltd.; six new buildings in Seabrook-road, for Mr. J. S. Clark; rebuilding of stable and coach house in Chapel-street, for Mrs. Gardner; motor garage at The Bungalow, Blackhouse Hill, for Mr. Thomas; house in Napier-gardens, for Messrs. Scott Bros.

KING'S LYNN.—Plans passed by T.C.: Pair of cottages, Langham-street, for Messrs. R. W. Fayers & Sons; garage, South Gates, for Mr. F. J. Davy; shop front, Tower-street, for Mr. E. Knape; pair of cottages, Saddlebow, for Mr. G. Towler.

LLANELLY.—The Ministry of Health has sanctioned expenditure on the construction of a new road from Swansea Road to Felinfoel. The Ministry of Transport is making a grant toward the capital expenditure of £14,000. The Council has decided to press their application for sanction to erect further houses.

LLANTRISANT.—The Llantrisant and Llantwit Fordre Council has decided to purchase buildings at £2,000 at Pantyclun for conversion to Council offices.

LONDON (BATTERSEA).—The L.C.C. has sanctioned the borrowing by the B.C. of £33,989 for the reconstruction of sewers.

LONDON (BERMONDSEY).—Plans passed by B.C.: Ice store, Galleywall-road, Messrs. G. Potton & Sons, for Messrs. Johnson, Cole, Brier & Corderoy; vicarage, Union-road, Messrs. Musselwhite & Son, for the Rev. W. W. Lucas.

LONDON (CITY).—The Corporation has adopted a recommendation of the Streets Committee permitting the acquisition by Lloyds Bank of a portion of the public way on the west side of Change-alley, Lombard-street, and of a piece of land at the rear of 22, Cornhill, subject to the payment of a sum of £10,000. It was stated that the bank required the land for the extension of their premises.

LONDON (FULHAM).—The Borough Surveyor has submitted plans for the conversion of the casual wards into slipper baths and washhouses at a cost of £22,296.

LONDON (GREENWICH).—Plans passed by B.C.: Garage, 8, Vanbrugh Park-road, for Mr. J. Long; disinfecting and cleansing station at Council's Depot, Tunnel-avenue, for the National Building Guild; drainage, 51, 53, 55 & 57, Church-lane, for Messrs Thomas & Edge.

LONDON (LAMBETH).—Additions to Brixton Skating Rink, for Messrs. Andrews & Peascod.

LONDON (STOKE NEWINGTON).—Drainage plans passed by B.C.:—At 183, High-street, for H. & G. W. Rowley; at 1–6, Cumberland-terrace, for Nield, Davey & Woods.—The Public Health Committee recommends the provision of 36 slipper baths at Park-street.

MAESTEG.—It was reported to the U.D.C. that Messrs. North's Navigation Coal Company were considering a scheme for supplying electricity to the district and that the Dunraven Estate had given permission for a bridge to be erected over the river connecting the Hearts of Oak buildings and Station-road, Nantyffylon. The Estate will also make a grant t the cost. The Council has for some time awaited this permit to proceed with the scheme.

MARGATE.—Plans passed by T.C.:—House and garage, Old Green-road, P. Levett; garage, Cornwall-gardens, Reeve & Reeve; house and garage, Cornwall-gardens, H. W. Binns; extension to ice works, Bath-place, S. Crofts; extension to basement, St. George's Hotel, P. Levett; additions, 16, Godwin-road, F. J. Doughty; two houses and garage, Arundel-road, T. Lester; X-ray room, Cottage Hospital, W. J. Mercer; house, Alexandra Homes, W. J. Mercer; house, St. Peter's-road, W. M. Miles; lock-up shop, Canterbury-road, F. Jones & Son; drainage to lock-up shop and two houses, All Saints-avenue, W. R. H. Gardner; two houses, Pembroke-avenue, W. R. H. Gardner; garage, Westonville-avenue, G. F. Hickisson; house, off Holly-lane, Northdown, R. A. Harris; extension to dining-room, Palm Bay Court, Wood & Co.

MERIDEN.—Plans passed by R.D.C.:—House, Allesley, Mr. W. Pegg; bungalows, Marston Green, Bickenhill, for Mr. T. J. Jones. Mr. T. J. Poole and Mrs. E. Kempton; bungalow, Tile Hill, Berkswell, Mrs. Ives; house, Coventry-road, Coleshill, Dr. B. Wall; bungalow, Coventry-road, Sheldon, Mrs. E. Stanley; house, Lode-lane, Sheldon, Mr. A. Davies; bungalow, Washbrook-lane, Allesley, Mr. F. R. Dyas; additions, golf clubhouse, Castle Bromwich, the Golf Club; bungalow, Allesley, Mrs. H. Dye; bungalow and shop, Coventry-road, Bickenhill, Mrs. T. Morgan; dwelling, Kelsey-lane, Berkswell, Mr. B. Kay; bungalow, Tile Cross, Sheldon, Mr. Prosser; additions, Tile Cross, Sheldon, Mr. Mills; bungalow, Elmdon-road, Marston Green, Bickenhill, Mr. T. Manton; bungalow, Tile Cross, Sheldon, Mr. J. Turner; and bungalow, Sheldon, Mr. F. G. Warwick.

MERTHYR TYDFIL.—The Parks Committee has decided to spend £175 on the Pant Memorial site. A sub-committee has been appointed to consider the estimate of £3,000 for laying recreation ground at Merthyr Vale and to approach the site owner of Dowlais recreation ground on the estimated expenditure of £2,760 necessary for fencing site.

MIRFIELD.—A plan for additions to Hopton Court, for Lieut.-Col. H. Wilson, has been approved by the U.D.C.

MOUNTAIN ASH.—The scheme for a new hospital at Mountain Ash, to be known as the Mountain Ash and Penrhiwceiber Hospital, has now assumed definite lines. Nine acres of land has been acquired, and it is estimated that total building and engineering expenditure will be about £40,000. The Miners' Welfare Fund has promised £1,000 to be expended in laying out the land adjoining the hospital site as an open-air resting-place for convalescent patients.

OGMORE AND GORW.—The U.D.C. has appointed committees to interview site owners at Pontycymmer and Blaengorw with a view of proceeding with the recreation grounds scheme.

PEMBROKE.—The Surveyor reported to the T.C. Committee that the road improvement scheme in area would cost £3,235. He was instructed to apply for grant from the County Council.

PEMBROKESHIRE.—The County Main Roads Committee has considered the estimate of £450 for repairs to Haverfordwest old bridge, and subject to details being satisfactory will authorise the work to be put in hand. The County Land Agent, Mr. J. J. James, has submitted a report to the Small Holdings Committee showing that over a dozen farm houses, cottages, &c., need to be erected, and some twenty sets of outbuildings, with minor repairs, in addition. The Committee adopted the report and decided further to apply for sanction to equip certain holdings.

PORT TALBOT.—The G.W.R. Company is to put in hand immediately a contract for station improvements, at an approximate cost of £3,000, at Port Talbot. This is the result of representation from the local Council. A further scheme for erecting a central station at Port Talbot is being considered by the Company; the directors at the last meeting gave instructions for the first-mentioned work to be at once carried out.

RHYMNEY.—The U.D.C. has instructed the Surveyor, after minor plan alterations, to invite tenders for erection of ten houses.

SWANAGE.—The Surveyor to the U.D.C. has submitted plans for the lay-out of the recreation ground, showing bandstand, conveniences, pavilion, tea rooms, &c., estimated to cost £6,682, and the matter has been referred to a Committee.

FIRES.

BURLEY-IN-WHARFDALE.—A garage, the property of Messrs. Warburton Bros., motor engineers, has been destroyed by fire.

CLYNDERWEN.—The stores of the Clynderwen branch of the Farmers' Co-operative Association have been completely gutted by fire.

FALKIRK.—A fire has occurred in the engine-house at the foundry of the Callendar Iron Co. The total damage is estimated at several thousands of pounds.

GLASGOW.—A fire has occurred in premises in Catherine-street, Townhead, occupied by Messrs. Jenkins Bros.

OGMORE VALE.—Damage to the extent of £2,000 was the result of a fire outbreak at the garage of Mr. W. James, general builder, at River-street, Ogmore Vale.

WOOLWICH.—Damage estimated at £4,000 has been done by fire at the Royal Arsenal Co-operative Society's Stores, in Powis-street.

* See also our List of Contracts, Competitions, etc.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.	£ s. d.
Best Stocks	4 2 0
Second Hard Stocks	3 17 0

Per 1000. Delivered at London Goods Stations

	£ s. d.		£ s. d.
Flettons, at			
King's Cross	3 1 0	Best Blue Pressed Staffs.	9 11 6
Do. grooved for plaster	3 3 0	Do. Bullnose	10 1 6
Do. Bullnose	3 16 0	Blue Wire Cuts	7 11 6

Best Stourbridge Fire bricks:—

2½ in.	11 3 0	3 in.	13 2 0

GLAZED BRICKS—

Best White, Ivory, and Salt-Glazed Stretchers	22 0 0	D'ble Str'tch'rs	30 10 0
		D'ble Headers	27 10 0
		One Side and two Ends	31 10 0
Headers	21 10 0	Two Sides and one End	32 10 0
Quoins, Bullnose and 4½in. Flats	28 10 0	Splays and Squints	30 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.	
Thames Ballast	13 6	per yard, delivered 2 miles radius Paddington.
Pit Sand	16 0	" "
Thames Sand	16 6	" "
Best Washed Sand	16 6	" "
¾ in. Shingle for Ferro-Concrete	14 0	" "
¼ in.	15 0	" "
¾ in. Broken Brick	10 6	" "
Pan Breeze	5 6	" "

Per ton delivered in London area in full van loads.

	£ s. d.
Best Portland Cement. British Standard Specification Test £3 3 0 56/- alongside at Vauxhall in 80-ton lots.	£3 8 6
Ferrocrete per ton extra on above	10 0
Roman Cement	8 15 0
Parian Cement	5 17 0
Keene's Cement, White	5 17 0
" " Pink	5 12 0
Plaster, Coarse, Pink	3 10 0
" " White	3 17 6
" Fine	5 12 0
Sirapite, Coarse	3 16 0
" Finish	4 4 0
Grey Stone Lime	2 16 6
Chalk Lime	2 16 6
Best Ground Blue Lias Lime	2 18 6
Hair	17 0 0
Granite Chippings	1 12 0

NOTE.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months, carr. pd.

Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

BATH STONE—delivered in railway trucks at	s. d.
Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	3 1
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	3 4
Do. do. delivered on road wagons at Nine Elms Depot	3 5

PORTLAND STONE—

Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 7
Do. do. delivered on road wagons at above stations, per ft. cube	4 8

White basebed, 3d. per ft. cube extra.

NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ¼d. beyond 30 ft.

YORK STONE, BLUE—*Robin Hood Quality.*

Delivered at any Goods Station London.	s. d.
6 in. sawn two sides landings to sizes (under 30 ft. super.) Per Ft. Super	5 10½
6 in. rubbed two sides, ditto "	6 4½
3 in. sawn two sides slabs (random sizes) "	2 5½
2 in. to 2½ in. sawn one side slabs (random sizes) "	1 6½
1½ in. to 2 in. ditto, ditto "	1 4

HARD YORK—

Delivered at any Goods Station London.	
Scappled random blocks Per Ft. Cube	6 0
6 in. sawn two sides landing to sizes (under 40ft. super.) Per Ft. Super	5 4½
6 in. rubbed two sides ditto "	6 0½
4 in. sawn two sides slabs (random sizes) "	2 10
3 in. ditto, ditto "	2 5½
2 in. self-faced random flags Per Yard Super	8 4

ARTIFICIAL STONE.

Delivered in London Area in full van loads.	s. d.
Plain	8 6 per ft. cube.
Moulded	10 0 " "
Cills	11 0 " "

WOOD.

GOOD BUILDING DEAL.

Inches	per stan.	Inches	per stan.
4 × 11	£36 0	3 × 6	£22 10
4 × 9	36 0	3 × 11	32 10
4 × 8	28 0	2 × 11	32 10
4 × 7	26 0	3 × 9	30 0
3 × 8	26 0	2½ × 9	30 0
3 × 7	22 10	3 × 4½	20 10
2½ × 7	22 10	3 × 4	20 10

PLANED BOARDS.

1 × 11	40 0	1 × 9	35 0

PLAIN EDGE FLOORING.

Inches	per sq.	Inches	per sq.
½	20/-	1½	32/6
¾	22/6	1¾	40/-
1	25/-		

WOOD (*Continued*).

TONGUED AND GROOVED FLOORING. Inches	per sq.	MATCHINGS (BEST). Inches	per sq.
	25/-	½	17/6
1	32/6	¾	22/-
1½	40/-	1	25/-

Inches	BATTENS.	s. d.
¾ × 2		2 6 per 100 ft.

SAWN LATHS.

Per bundle	0 3 0

Dry Wainscot Oak, per ft. super, as inch	0	2	6	to	0 3 0
¾ in. do. do.	0	1	10½	to	0 2 6
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0	2	3	to	0 3 0
Cuba Mahogany	0	3	6	to	0 4 0
Teak (Rangoon, Moulmein or Java), per load	45	0	0	to	50 0 0
American Whitewood planks, per ft. cube	0	16	0	to	0 18 0
Best Scotch Glue per cwt	6	15	0	to	—
Liquid Glue, per cwt.	4	7	0	to	5 10 0

SLATES.

1st quality slates from Bangor or Portmadoc in truck loads delivered London area. Per 1,000 of 1,200.

	£ s. d.		£ s. d.
24 by 12	41 17 0	18 by 10	23 12 6
22 by 12	38 0 6	18 by 9	20 16 3
22 by 11	35 2 0	16 by 10	19 16 0
20 by 12	33 8 3	16 by 8	15 8 3
20 by 10	28 11 6		

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	6 0 0
Ditto hand-made ditto	6 10 0
Ornamental ditto	6 15 0
Hip and valley tiles (per dozen) Hand made	0 8 6
Machine made	0 8 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R. S. Joists, cut and fitted	13 0 0
Plain Compound Girders	15 0 0
" Stanchions	17 0 0
In Roof Work	20 0 0

WROUGHT IRON TUBES AND FITTINGS—

(Discount off List for lot of not less than £15 net value delivered direct from Works. 5 per cent. less above gross discounts, carriage forward if sent from London Stocks.)

	Tubes. (all sizes).	Fittings, Up to 2".	Fittings, Over 2".	Flanges. Up to 2".	Flanges. Over 2"
Gas	55 %	50 %	55 %	60 %	65 %
Water	50 %	45 %	50 %	55 %	60 %
Steam	45 %	40 %	45 %	50 %	55 %
Galv'd—					
Gas	45 %	42½ %	47½ %	52½ %	57½ %
Water	37½ %	37½ %	42½ %	47½ %	52½ %
Steam	27½ %	32½ %	37½ %	42½ %	47½ %

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6ft. plain	3 2½	2 5	2 11
2½ in. "	3 9½	2 8	3 8
3 in. "	4 5½	2 11	4 4
3½ in. "	4 10½	3 8	5 1
4 in. "	5 5	4 1	5 10

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6ft. plain	1 10½	1 4½	1 10½
2½ in. "	2 1	1 7½	2 3
3 in. "	2 6	2 0	3 0
3½ in. "	2 11	2 4½	3 6
4 in. "	3 5	2 10½	4 3

L.C.C. DRAIN PIPES.—9 ft. lengths. London Prices per yd.: 4 in., 5/3. 5 in., 6/9. 6 in., 8/-.

IRON—	Per ton in London. £ s. d.		£ s. d.
Common Bars	12 10 0	to	13 10 0
Staffordshire Crown Bars good merchant quality	13 10 0	..	14 10 0
Staffordshire "Marked Bars"	16 0 0	..	17 0 0
Mild Steel Bars	12 0 0	..	13 0 0
Steel Bars, Ferro-Concrete quality, basis price	12 0 0	..	13 0 0
Hoop Iron, basis price	15 0 0	..	16 0 0
" Galvanised	29 0 0	..	31 0 0
Soft Steel Sheets, Black—			
Ordinary sizes to 20 g.	14 0 0	..	15 0 0
" " 24 g.	15 0 0	..	16 0 0
" " 26 g.	16 10 0	..	18 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—			
Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	20 0 0	..	21 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.	21 0 0	..	22 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g.	23 0 0	..	25 0 0
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 9ft. 20 g.	19 0 0	..	20 0 0
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	19 10 0	..	20 10 0
Ordinary sizes, 6ft. to 9ft. 26 g.	21 10 0	..	22 10 0

METALS (*Continued*).

Sheets Galvanised Flat, Best quality—	Per ton in London. £ s. d.		£ s. d.
Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker	22 0 0	..	23 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	23 0 0	..	25 0 0
Best Soft Steel Sheets, 26 g.	24 10 0	..	25 10 0
Cut Nails, 3in. to 6in.	21 10 0	..	23 0 0

(under 3in. usual trade extras.)

METAL WINDOWS—Standard sizes suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1/4 to 1/7 per foot super.

LEAD, &c.

	Delivered in London. £ s. d.		
LEAD—Sheet, English, 4 lb. and up	34 10 0	..	—
Pipe in coils	35 0 0	..	—
Soil Pipe	37 10 0	..	—
Compo pipe	38 10 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills per ton	21	0 0	—
Do., ex country, carriage forward per ton	22	0 0	—
COPPER—			
Strong Sheet per lb.	0	2 3	—
Thin "	0	2 4	—
Copper nails "	0	2 3	—
Copper wire "	0	2 4	—
TIN—English Ingots "	0	1 9	—
SOLDER—Plumbers' "	0	0 10	—
Tinmen's "	0	1 0	—
Blowpipe "	0	1 3	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	3½d.	32 oz. fourths	8½d.
" thirds	4½d.	" thirds	10d.
21 " fourths	5½d.	Obscured Sheet, 15 oz.	4½d.
" thirds	6d.	21 "	7d.
26 " fourths	6½d.	Fluted and Enamelled 15 "	8½d.
" thirds	7½d.	21 "	10½d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
⅛ Rolled plate	4½d.
¼ Rough rolled	5½d.
½ Rough rolled	5½d
Figured Rolled, Oxford Rolled, Baltic, Oceanse Arctic, Stippolyte, and small and large Flemish white	6½d
Ditto, tinted	9d
Rolled Sheet	6d
White Rolled Cathedral	5½d
Tinted do.	7½d

Cast Plate is same price as rough rolled.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil in pipes per gallon		0 3 7
" " " in barrels "		0 3 9
" " " in drums "		0 4 0
Boiled " " in barrels "		0 4 1
" " in drums "		0 4 3
Turpentine in barrels "		0 10 3
" in drums (10 gall.) "		0 10 6
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		54 5 0

GENUINE WHITE LEAD PAINT—

"Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots	per ton delivered	75 10 0
Red Lead, Dry (packages extra)	per ton	38 0 0
Best Linseed Oil Putty	per cwt.	0 17 0
Filocol	per cwt.	0 15 6
Size. X D Quality	fkn.	0 3 6

VARNISHES, &c.

	Per gallon. £ s. d.
Oak Varnish Outside	0 14 0
Fine ditto ditto	0 16 0
Fine Copal ditto	0 18 0
Pale Copal ditto	1 0 0
Pale Copal Carriage ditto	1 4 0
Best ditto ditto	1 12 0
Floor Varnish Inside	0 18 0
Fine Pale Paper ditto	0 18 0
Fine Copal Cabinet ditto	1 2 6
Fine Copal flatting ditto	1 0 6
Hard drying Oak ditto	0 18 0
Fine Hard drying Oak ditto	0 19 0
Fine Copal Varnish ditto	1 0 0
Pale ditto ditto	1 2 0
Best ditto ditto	1 12 0
Best Japan Gold Size	0 12 0
Best Black Japan	0 12 0
Oak and Mahogany Stain (water)	0 12 0
Brunswick Black	0 9 0
Berlin Black	0 14 0
Knotting (patent)	1 5 0
French and Brush Polish	0 17 6
Liquid Dryers in Terebine	0 10 0
Cuirass Black Enamel	0 7 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	15	0
Add if in clay	" "	1	6
Add for every additional depth of 6 ft.	" "	0	9
Planking and strutting to trenches	per foot super	0	7
Do. to sides of excavation, including shoring	" "	1	2

CONCRETOR.

Portland cement concrete in foundation 1 to 6	per yard cube	40	0
Add if in underpinning in short lengths	" "	9	0
Add if in floors 6 in. thick	" "	3	9
Add if in beams	" "	4	6
Add if aggregate 1 : 2: 4	" "	11	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	3	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	34	0	0
Add if in stocks	"	8	10	0
Add if in Staffordshire blues	"	24	0	0
Add if in Portland cement and sand	"	3	0	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

Neat flat strucks or weathered joint	" "	0	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	" "	0	0	10
Axed in stocks	" "	0	1	9
Rubbed and gauged jointed in putty camber or segmental	" "	0	6	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	3
Setting ordinary register grates and stoves	each	1	1	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	5	5	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	7	6
Three-quarter-inch vertical damp course	" "	11	0
¾ inch on flats in two thicknesses	" "	8	6
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	4

MASON.

York stone templates fixed	per foot cube	16	3
York stone sills fixed	" "	28	6
Bath stone and all labour fixed	" "	12	0
Portland stone fixed	" "	21	6

SLATER.

Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	79	9
Do. 20 in. × 10 in. Do. Do.	"	90	9
Do. 24 in. × 12 in. Do. Do.	"	99	0

CARPENTER AND JOINER.

Fir framed in plates	per foot cube	5	6	
Do. joists	" "	6	0	
Do. roofs, floors and partitions	" "	6	6	
Do. trusses	" "	8	6	

		¾"	1"	1¼"	2"
Deal rough close boarding	per sq.	42/-	48/-	56/-	85/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	60	0
Do. to beams	per ft. sup.	1	6
Centres for arches	"	2	0
Gutter boards and bearers	"	1	1

FLOORING.		¾"	1"	1¼"	1½"
Deal-edges shot	per sq.		49/-	58/-	67/-
Do. tongued and grooved	"		54/-	65/-	72/-
Do. matchings	"	45/-	55/-		
Moulded skirting, including backings and grounds	per ft. sup.	1/8	2/1	2/3	2/9

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	" "	2	3
Add for fitting and fixing	" "	0	6
Deal-cased frames with 1 in inner and outer linings, 1¼ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	" "	4	0

DOORS.

		1¼"	1¾"	2"
Two-panel square framed	per ft. sup.	2/4	2/7	2/9
Four-panel Do.	"	2/8	3/0	3/3
Two-panel moulded both sides	"	3/0	3/3	3/6
Four-panel Do. Do.	"	3/3	3/7	3/10

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	14	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	1/9	1/10	2/1
Deal shelves and bearers	"	1/6	1/8	1/11
Add if cross tongued	"	2d.	2d.	2d.

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets		2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed		1/8	2/-	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run.	0	9
Mahogany handrail; average 3 in. × 3 in.	" "	6	0
Add if ramped	" "	11	10
Add if wreathed	" "	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/4
Sash fasteners	11½d.	Mortice locks	5/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	17	0
Plain compound girders	"	20	0
Do. stanchions	"	23	0
In roof work	"	28	0

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints	ft. run	1/11	2/4½	3/7	4/-
Ogee Do. Do.	"	2/4½	3/1	3/10	4/9
Rain-water pipes with ears	"	2/9	3/7		
Extra for shoes and bends	each	4/4	5/11		
Do. stopped ends	"	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	"	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt	56	0
Do. Do. in flats	"	52	0
Extra labour and solder in coated cesspools	each	7	4
Welt joint	per ft. run.	0	6
Soldered seam	" "	1	10
Copper nailing	" "	0	7

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	10d.	1/6	1/9	3/1	3/10	
Do. service	"	1/5	1/11	2/3	3/6		
Do. soil	"						6/2
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	"	1/2	1/8	2/1	2/10	3/6	
Red lead joints	"	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	"	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	"				14/7	19/6	
Bib cocks and joints	"	6/4	9/7	15/4	41/-		
Stop cocks and joints	"	15/4	17/2	25/8	64/-		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	2	9
Do. Do. Sirapite	" "	2	11
Do. Do. Keen's	" "	4	0
Add sawn lathing	" "	1	7
Add metal lathing	" "	2	10
Portland cement screed	" "	2	1
Do. plain face	" "	3	9
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	4

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	1
26 oz. Do.	" "	1	4
Obscured sheet	" "	1	8
⅛ in. rolled plate	" "	1	0
¼ in. rough rolled or cast plate	" "	1	1
¼ in. wired cast plate	" "	1	7

PAINTER.

		s	d.
Preparing and distempering, 2 coats	per yard sup.	1	0
Knotting and priming	" "	0	8
Plain painting 1 coat	" "	0	11
Do. 2 coats	" "	1	7
Do. 3 coats	" "	2	4
Do. 4 coats	" "	3	0
Graining	" "	2	5
Varnishing twice	" "	1	11
Sizing	" "	0	4
Flatting	" "	0	8
Enamel	" "	1	3
Wax polishing	per foot sup	0	9
French polishing	" "	1	3
Preparing for and hanging paper	per piece	2/- to 4/-	

* These prices apply to new buildings only. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than Tuesday evening.*

* Denotes *accepted.* † Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modifications.*

ACTON.—For erection of six pairs of brick parlour-type houses on the East Acton housing estate, for the Corporation. Mr. W. Hodson, Municipal Offices, Acton :—

*The Westminster Building Co., Ltd., London	£5,000

ADEL.—For erection of a pair of cottages at Adel Training School, for the Property Committee. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds :—

*Paul Rhodes, Leeds	£1,714 12 9

BLACKPOOL.—For erection and completion of 68 houses, for the County Borough. Mr. Edgar D. Dennis, architect, 27, Clifton-street, Blackpool :—

*Levi Brindle, Chorley—	
48 new type houses approved for State aid, average each	£310 14 2
14 new type houses, unassisted, average each	316 0 2
6 old type houses, unassisted, average each	467 5 0
Drains and fences—£20 9s. 8d. per house.	

BUXTON.—For the reconstruction of the natural baths, for the T.C. :—

†Ridyard & Son, Ashton-under-Lyne	£16,604 16

CARDIFF.—For erection of a residence at Ely-rise, for Mr. Donald Brown. Messrs. Rodger & Stevens, architects, 25, Stoke-lane, Westbury-on-Trym, Bristol; quantities by architects :—

E. T. Hatherley, Penarth	£2,365 0 0
Alfred W. Julien, Pontypridd	2,337 0 0
Charles Parker & Co., Cardiff	2,053 0 0
Dawkins, Harris & Weaver, Chepstow	2,040 0 0
John Charles & Son, Newport	1,997 0 0
Thornton Hall, Whitchurch	1,995 18 9
W. Cox & Son, Llandaff	1,964 0 0
W. J. Smith & Co., Cardiff	1,950 0 0
W. Symonds & Sons, Ltd., Cardiff	1,950 0 0
E. R. Evans, Bros., Ltd., Cardiff	1 939 4 4
Shail (Llandaff) Ltd., Llandaff	1,905 0 0
Knox & Wells, Ltd., Cardiff	1,877 0 0
E. P. Edwards & Co., Cardiff	1,868 11 8
R. H. Blacker & Son, Cardiff	1,825 0 0
Walter W. Peek, Cardiff	1,798 0 0
W. S. Engien, Cardiff	1,788 0 0
J. E. Evans & Co., Cardiff	1,785 0 0
H. E. Edwards & Co., Cardiff	1,782 5 9
R. E. J. Haines & Son, Cardiff	1,775 0 0
Newcombe & Co., Cardiff	1,775 0 0
E. & H. James, Cardiff	1,726 0 0
R. A. Bond & Co., Cardiff	1,714 0 0
Price & Morgan, Ltd., Cardiff	1,595 0 0
*Watts & Gale, Cardiff	1,587 0 0

CHORLEY.—Completion of street works at Coppull West, Eccleston and Euxton, for the R.D.C. :—

*Baxendale Bros., Chorley	£512

DURHAM.—For (1) widening highway at Broom-park Village; (2) making up roadway in Keeper-lane, for the R.D.C. Mr. Geo. Gregson, surveyor, 38, Sadler-street, Durham :—

G. Percy Trentham, Ltd., Edinburgh	£1,955 17 5	£1,618 17 6	
J. W. White, Sunderland	2,260 16 8	1,580 12 3	
C. Martin, Ltd., York	1,923 12 10	1,563 9 8	
Jas. Byrom & Sons, Ltd., Bury	1,998 4 0	1,366 0 0	
D. & J. Crombie & Co., Ltd., Sunderland	1,512 17 1	1,359 4 10	
Tarslag, Ltd., Stockton-on-Tees	1,896 0 0	1,271 4 6	
The Alston Limestone Co., Ltd., Newcastle-on-Tyne	1,623 6 6	1,217 17 6	
F. M. Willers & Co., Bishop Auckland	1,424 15 9	1,129 6 9	
E. Shorten Langley, Park	1,923 12 10	—	
C. E. Gibson, Eaglescliffe	1,789 6 6	—	
*Jas. McLaren, Junr., Newcastle-on-Tyne	*1,278 1 4	1,165 6 6	
*Dyson, Lindsley & Co., Chester-le-Street	1,507 5 11	*1,096 2 3	

HENDREFORGAN (GLAM.).—For the erection of a new Mixed Junior Council School, for the Glamorgan Education Committee. Mr. D. Pugh Jones, County Architect, County Hall, Cardiff :—

*Davies & Lloyd, Senghenydd	£4,196

LONDON.—For laying compressed asphalte, 2 in. thick, in York-road and Stamford-street, for the Lambeth B.C. :—

*Limner & Trinidad Lake Asphalte Co.	13s. 4d. per yard super.

LONDON.—Supply of artificial stone paving for the repaving of footway in Norwood-road, for the Lambeth B.C. :—

*Ernest Matthews & Co.—Aberdeen Adamant—	7s. 3d. per yard super.
Patent Victoria Stone Co.—Victorite—	10s. 6d. per yard super.
Non-slip Stone Co.—Hard York Non-slip	12s. 4d. per yard super.

LONDON.—Supply of road material to the Lambeth B.C. :—

*E. Matthews & Co.—120 tons of specially dressed paving setts, per ton	£4 4 9
*E. Matthews & Co.—650 tons of Aberdeen granite setts, per ton	4 9 6
*E. Marshall & Sons—10,000 feet super Yorkshire and Lancashire paving, per 100 ft. super	9 19 10

LONDON.—For the supply of wood paving blocks to the Hackney B.C. :—

	Per thousand. 8″×4½″×3″.	9″×5″×3″.
*Acme Flooring Co.	£12 8 6..	£17 5 0
Burt, Boulton & Haywood	11 16 3..	15 12 6
Calders, Ltd.	13 5 7..	18 13 0
W. Christie & Co., Ltd.	14 1 3..	17 10 0
Gabriel Wade & English, Ltd.	13 0 0..	19 0 0
Improved Wood Pavement Co., Ltd.	12 15 6..	17 12 6
J. B. Lee & Sons, Ltd.	*17 9 0..	19 7 6
	*14 15 0..	16 9 0
Public Authorities Mutual Supplies, Ltd.	13 5 0..	17 5 0

*Quotes for 9 in. × 4½ in. × 3 in.

LONDON.—Foundations of turbo-generator at Greenwich Power Station, for the L.C.C. :—

Holloway Bros. (London), Ltd., S.W.1	£5,140 0 0
Thomas Edge, S.E.18	5,132 0 0
Holland & Hannen & Cubitts, Ltd., W.C.1	5,060 0 0
John Mowlem & Co., Ltd., S.W.1	4,458 5 0
John Garrett & Son, S.W.	3,950 0 0
National Building Guild, Ltd., W.C.1	3,765 0 0
P. & W. Anderson, Ltd., W.1	3,758 0 0
Walter Jones & Sons, S.W.1	3,654 6 6
Thomas D. Leng, S.E.8	3,361 0 0
Fred. & T. Thorne, E.14	3,195 0 0
Walter Lawrence & Sons, Ltd., E.C.2	3,148 0 0
*J. & C. Bowyer, Ltd., S.E.19	2,979 0 0

LONDON.—For repairing defective drains at Sundorne-road, Charlton, for the Greenwich B.C. :—

*J. J. Forrest	£244 10

LONDON.—For the erection of 168 houses on the Roehampton Estate, for the L.C.C. :—

Davidson & Sykes, Ltd., S.W.1	£103,920 0 0
Allen Fairhead & Son, Enfield	92,168 0 0
J. Tong, Larpent-ave., S.W.15	90,946 2 5
Walter Jones & Sons, S.W.1	89,184 0 0
A. G. Winters, S.E.25	86,016 0 0
Arding & Hobbs, S.W.11	85,256 0 0
C. Miskin & Sons, Ltd., St. Albans	85,069 0 0
Wood Bros. (Builders), Ltd., E.7	79,338 0 0
Thomas Shillitoe, N.7	78,365 0 0
W. Pattinson & Sons, Ltd., S.W.1	77,679 0 0
S. E. Moss, Southend-on-Sea	77,460 0 0
Ernest Clarke, Leicestershire	77,379 0 0
Thomas & Edge, S.E.	73,756 0 0
Samuel Gee & Sons, Ltd., Derby	72,358 0 0
Charles Groom, Sons & Co., Ltd., W.	70,491 0 0
Rowley Brothers, N.	69,725 0 0
R. Merton Hughes, W.6	69,243 0 0
Unit Construction Co., Ltd., W.	69,136 0 0
George Slade & Co., Ltd., N.1	67,265 18 0
Roberts (Birmingham), Ltd., Birmingham	65,589 9 0
*W. Alban Richards & Co., Ltd. S.W.1	62,801 0 0
P. W. Gladstone, S.W.	†11,710 0 0
Charles Jeyes, Luton	†10,045 0 0
Perry Bros., W.5	†9,396 0 0

†Part only.

LONDON.—Supply of four electric lifts at the Central Repair Depot, for the L.C.C. :—

London Hoist & Machinery Co., E.C.2	£4,565 0
Higginbottom & Mannock, Ltd., Manchester	3,250 0
John Bennie, Glasgow	3,110 10
A. & P. Steven, Glasgow	2,990 0
Marryat & Scott, Ltd., E.C.1	2,899 0
Waygood-Otis, Ltd., E.C.4	2,866 10
Express Lift Co., S.W.1	2,817 0
Reliance Lift & Engineering Co., Ltd., Bradford	2,795 0
Do., Do., Alternative	3,076 0
John Hill & Sons, Stourbridge	2,695 0
Aldous & Campbell, Ltd., S.E.1	2,560 0
Hoisting Appliance Co., N.7	2,399 0
Medways' Safety Lift Co., Ltd., S.E.8	2,360 0
Wm. Wadsworth & Sons, Ltd., Bolton	2,350 0
Pickerings, Ltd., Stockton-on-Tees	2,347 0
Etchells, Congdon & Muir, Ltd., Manchester	2,217 0
R. A. Evans, Ltd., Leicester	2,205 0
S. H. Heywood & Co., Ltd., Reddish	2,109 0
Keighley Electrical Engineering Co., Ltd., Keighley	1,970 0
*Messrs. Holt & Willetts, Cradley Heath	1,838 0
British Steel & Iron Exporters, Ltd., E.C.4 (not according to specification)	1,694 0

LONDON.—For alterations at Euston fire station, for the L.C.C. :—

*C. P. Roberts & Co., Ltd.	£399

LONDON.—For the external painting of fire stations, for the L.C.C. :—

*John Marsland & Sons, Ltd.	Group A. £446 0
*J. Scott Fenn	Group B. £288 19
*Stevens & Sons	Group C. £263 0

LONDON.—For relaying with ironstone tiles the floor of appliance room at Manchester-square fire station, for the L.C.C. :—

*Triggs & Co.	£285

METROPOLITAN ASYLUMS BOARD.—The following tenders are recommended for acceptance :—

South-Western Hospital—New concrete paving and repairs to tar-paving—
†J. Wainwright & Co., Ltd., N.W.1 £158 18 6

Installation of wash basins and sterilisers at Pinewood—
†J. B. Seward & Co. £181 13

Supply of locks, bolts, and certain panic bolts for the works at Tooting Bec Mental Hospital Extension—
†James Gibbons, Ltd. £370 3

Additions to isolation building at High Wood—
Myall Bros., Leigh-on-Sea £150

PEMBROKESHIRE.—For erection of two sets of outbuildings on two small holdings, for the County Small Holdings Committee :—

*Messrs. S. George & Michael, Kilgerran	£1,099

PONTYPRIDD.—For erection of 20 houses, for the U.D.C. Mr. W. E. Lowe, Surveyor, Municipal Buildings, Pontypridd :—

S. Bennett, Cardiff	£13,400
D. M. Isaac & Son, Ynyshir	10,980
W. J. Davis, Pontypridd	10,200
E. J. Williams & Sons, Cardiff	9,500
A. W. Julian, Pontypridd	9,430
Anthony & Jones, Pontypridd	9,200
James Herbert, Pontypridd	8,500
R. Burton, Bedwas	8,010
Rogers & Davies, Cardiff	7,950
E. H. James, Cardiff	7,900
Evans, Whittle & Hancock, Cardiff	7,789
Rhys J. Rees, Pontypridd	7,495
*W. Blackburn & Co., Treharris	7,200

ROTHERHAM.—Erection of offices, for the R.D.C. :—

*Chadwick & Co.	£7,549

ROTHERHAM.—For construction of sewers at Brinsworth and Whiston, for the R.D.C. :—

Mullins & Co., Doncaster	£2,400

RUSKINGTON.—For laying nearly three miles of water mains, for the U.D.C. Mr. S. F. Clare, surveyor, Watergate, Sleaford :—

J. E. Nadin & Son, Ltd., Sheffield	£3,000 0 0
John Robinson, Darlington	2,231 0 6
James E. Turner, Heywood	1,788 2 0
H. C. Pullar & Co., Manchester	1,404 12 0
W. Lane, Ltd., Cambridge	1,244 5 0
Hanney Bros., Swansea	1,043 1 0
J. T. Barnes, Sleaford	960 0 0
W. Pattinson & Sons, Ruskington	942 0 0
John Langley & Son, Ltd., Kirton Boston	899 10 6
*Wallhead Bros., Ruskington	828 0 0

SALFORD.—For sewering, paving and completing the following streets, for the T.C. :—

*Thomas Wilson, Pendleton—Kellet-street, from Langworthy-road South to New River-street, Weaste	£1,820	2 10
*Joseph H. Bradshaw, Ltd., Manchester — Wainman-street, Pendleton	592	8 1
Chinley-street, Pendleton	427	7 5
*W. H. Worthington, Ltd., Manchester — Rostron-street, Broughton	978	5 10
*Thomas Wilson, Pendleton—Street fronting Whit-lane Paper Works, Pendleton	232	15 9.

SALFORD.—Supply and fixing of three fire escape ladders at Marple Sanatorium, for the T.C. :—

*Monkbridge Construction Co., York	£134 4 7

SALFORD.—Supply of materials to the Highways Committee of the T.C. :—

*Penmaenmawr & Welsh Granite Co., Ltd., Liverpool—1,500 tons granite setts, at 61s. 9d. per ton	£4,631 5 0
*Ernest Matthews & Co. (J. & W. Henderson, Ltd.), London—300 tons granite setts, at 43s. 6d. per ton	652 10 0
*Festiniog Granite Quarries, Ltd., Festiniog—250 tons granite setts, at 62s. per ton	775 0 0
*Harrington Quarries—limestone chippings	208 2 6
*J. J. Lee, Manchester—tarred slag	717 16 8
*J. Hall & Son, Dukinfield—earthenware pipes	179 9 0
*T. Ratcliffe, Bacup—flags and curbs	283 19 2

SALFORD.—For alterations at Trafford-road Girls' School, for the T.C. :—

*S. Megarity & Co., Higher Broughton	£1,443

SALFORD.—For supplying and fixing heating boilers at (1) Regent-road; (2) St. John's; and (3) St. Philip's Schools, for the T.C.:—

*G. Dawson & Son, Salford..£123 15s., £98 16s., and £83 14s. respectively.

SUDBURY.—For the erection of two houses and garages at Sudbury, Middlesex, for Mrs. E. V. Sutton. Mr. F. Rudkin, architect.

*R. H. Powis, Wembley..... £8,000

TINGRITH (BEDS).—For erection of a new lodge for Mr. Stewart Hubbard. Sir H. Trustram Eve, K.B.E., F.S.I., Land Agent, Bedford:—

A. W. Oakley, Luton	£1,098 15
L. C. Peck & Sons, Barton	985 9
*T. Briden, Toddington	875 0

WANDSWORTH.—For painting, &c., Intermediate School. The Clerk, Union Offices, St. John's-hill, Wandsworth, S.W.18:—

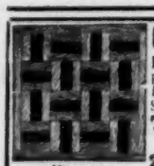
A. Black & Son, London	£1,250 0 0
A. Bentley & Sons, Ltd., London	1,200 0 0
The South-Western Ex-Service Men's Building & Decorating Association, Ltd., London '..	1,085 0 0
Chappell Bros., London	1,065 0 0
W. Dale & Co., London	870 0 0
A. H. Willats & Co., London ..	850 0 0
The Builders' Engineering Co., Ltd., London	845 0 0
Phelps & Wilton, Ltd., London	836 0 0
M. Greenwood & Son (Burnley), Ltd., London	821 17 9
H. A Thomas & Son, London..	£820 0 0
Lane Bros., London.....	790 0 0
Myall Bros., Southend.....	789 15 0
Burnand & Pickett, Ltd., Wallington	775 0 0
The Hampshire House Workshops, London	770 0 0
Sampson & Hutchcroft, London	765 9 0
R. Woollaston & Co., London..	764 0 0
Hickman, Ltd., London.....	635 0 0
Cooper Upton, Ltd., London..	615 0 0
Arding & Hobbs, London.....	600 0 0
S. T. Wright, London.....	584 0 0
W. Bailey, London	577 0 0
Triggs & Co., Clapham.....	575 10 0
R. Haslam & Son, London....	565 2 6
F. C. Flack, London.....	398 0 0
H. Meckhonik, London.....	348 0 0
*J. Scott Fenn, London.....	0 0

WEMBLEY.—For making-up (1) Park-lane and Wembley Park-drive; (2) Wembley Hill-road; (3) decorations to Council Offices; (4) fencing One Tree Hill, for the U.D.C. Mr. C. R. W. Chapman, Council Offices, Wembley:—

(1) Charles Carter	£22,983 6 4
William Shepherd & Sons, Ltd.	22,878 5 5
Campbell Kenyon & Co.....	20,499 9 6
C. F. Cole.....	19,785 14 10
G. Percy Trentham, Ltd.....	18,200 0 0
J. Hodson & Son, Ltd.....	17,944 12 8
W. Manders & Co	17,858 4 3½
Parr-Head & Clements Knowling, Ltd.	17,777 0 0
Limpus & Co.	17,476 19 4
George Wimpey & Co.....	17,220 3 3
C. V. Buchan & Co., Ltd.....	17,071 0 0
John Mowlem & Co.....	16,193 3 8
G. J. Anderson.....	15,719 1 4
R. H. Powis	14,970 8 1
(2) William Shepherd & Sons, Ltd.	14,692 10 4
Campbell Kenyon & Co.....	11,304 15 6
Charles Carter	9,951 3 9
G. Percy Trentham, Ltd.	9,950 0 0
C. V. Buchan & Co., Ltd.....	9,766 0 0
J. Hodson & Son, Ltd.....	9,732 4 5
W. Manders & Co.....	9,566 2 4
Limpus & Son	9,402 6 0
Parr-Head & Clements Knowling, Ltd.	9,277 0 0
G. J. Anderson.....	8,875 11 10
C. F. Cole	8,797 0 9
George Wimpey & Co.....	8,617 0 9
John Mowlem & Co., Ltd.....	8,476 15 1
R. H. Powis.....	7,258 7 3
(3) Unit Construction Co., Ltd..	395 13 7
A. J. Osborne	393 0 0
R. Hewett, Ltd.....	386 13 0
G. Hallard & Sons	325 0 0
T. A. Leach	316 0 0
C. W. Peach.....	298 0 0
H. H. Farmborough & Sons..	292 10 0
Callow & Wright	290 0 0
T. W. Heath, Ltd.	279 0 0
H. E. Skull	271 19 0
Eames Bros.	254 10 0
A. H. W. Todman	240 12 6
J. Buchanan.....	216 18 0
J. E. Ree	212 4 0
M. Greenwood & Son	203 0 0
(4) Victoria Fencing Co...	£232 10 0.. £221 13 4
Henry Burn	198 6 8.. 185 0 0
Quenby Fry & Co., Ltd.	196 13 4.. 186 12 4
Rowland Bros.	193 6 8.. 181 13 4
Neville Hine & Co.....	188 6 8.. 180 0 0
Fernden Fencing Co...	180 0 0.. 168 6 8
Invicta Fencing Co...	170 0 0.. 158 6 8
Albert Knowles	168 6 8.. 161 13 4
R. Goodban	156 13 4.. 149 3 4
H. J. Ford	148 6 8.. 155 0 0

WHICKHAM.—For making-up of portion of the roadway from the boundary of the Council Housing site, Byermoor. Mr. T. Benbow, Surveyor, Council Offices, Whickham, Swalwell, S.O.:—

D. & G. Sommerville & Co., Newcastle-on-Tyne	£592 10 6
D. & J. Crombie & Co., Sunderland	476 10 1
D. Percy Trentham, Ltd., Edinburgh	412 10 3
J. W. Robson, Gosforth.....	400 9 9
Dyson Lindsley & Co., Ltd., Chester-le-Street	388 6 9
H. Kindred, Sunniside.....	379 10 0
P. Harle, Sunderland	344 0 10
*S. Oake & Co., Ltd., Hebburn-on-Tyne	341 11 3



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